

**Minnesota Heart Disease and Stroke Prevention Initiative
Literature Review –October 2004
Environmental Setting: Worksites**

Coronary risk factor behavior change in hospital personnel following a screening program.

Reference

Baier, C .A., Grodzin, C. J., Port, J. D., Leksas, L., & Tancredi, D. J. (1992, March-April) Coronary risk factor behavior change in hospital personnel following a screening program. *American Journal of Preventive Medicine*. 8(2), 115-122. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

A worksite cardiovascular disease (CVD) awareness and education program was conducted at a large medical center.

The intervention methods included:

- employee screening for blood pressure and total serum cholesterol level,
- dissemination of information on risk factors for CVD,
- counseling on behavior change, and
- evaluation of the screening event as an educational tool.

Screened for hypertension and hypercholesterolemia were 2,284 employees at a 5-day event.

Additionally:

- consenting employees received counseling on their results and CVD risk factors; and
- appropriate referrals to health care professionals and educational programs were made according to national guidelines.

Evaluation

Methods of evaluation included:

- follow-up surveys, 3-month and 6-month, were distributed to all participating employees; and
- screening 8-months after the initial screening for blood pressure and serum cholesterol.

Key Findings

Worksite screening programs may influence significant serum cholesterol and blood pressure reductions in high-risk employees as suggested through the comparison of the levels taken from both screenings of 234 participants.

Seattle 5 A Day worksite program.

Reference

Beresford, S. A., et al. (2001). Seattle 5 A Day worksite program to increase fruit and vegetable consumption. *Preventive Medicine*. 32(3), 230-238.

Also published in:

Beresford, S. A., et al. (2000) Seattle 5 A Day worksite project: Process evaluation. *Health Education and Behavior*. 27(2), 213-222.

Environmental Intervention and Policies

The setting was worksites in the greater metro-area of Seattle, with 250-2,000 employees, and cafeterias. The targeted population was with 28 worksites (14 intervention and 14 control).

Each worksite had an employee advisory board (EAB), to guide their project activities. EAB's had representation from all employee groups, and were assisted by a study staff person. Each EAB tailored the intervention to their worksite. This study utilized the stages of change model. EABs could choose from a “menu” of messages for each of the “stages”.

Channels to deliver messages included:

- posters,
- brochures,
- table tents,
- paycheck inserts,
- flyers,
- newsletters,
- food demonstrations,
- message cards,
- tip sheets, and
- self-help manual.

Evaluation

An X-sectional survey was conducted with samples of 125 employees per worksite; comparing mean fruit/vegetable consumption at baseline and 2-year follow-up and unobtrusive site-level indicators (e.g. plate observation, cafeteria checklist).

Key Findings

There was a significant increase in fruit/vegetable consumption in the intervention worksites.

The “Working Well Trial”.

Reference

Biener, L., et al. (1999) Impact of the working well trial on the worksite smoking and nutrition environment. *Health Education and Behavior*. 26(4), 478-494.

Environmental Intervention and Policies

The setting for the intervention was with manufacturing, communication, public service and utilities worksites. The targeted population was in 111 intervention and control worksites representing manufacturing, communication, public service and utilities.

Each worksite had an employee advisory board (EAB), to guide their project activities. EAB's had representation from all employee groups. Interventions aimed at improving the nutrition environment varied according to whether the worksite had a cafeteria. Examples of individual behavioral change activities included employees modifying traditional family recipes, sharing them, and having taste-tests, self-assessment activities, games and contests. Examples of physical environmental change activities were offering point-of-purchase information, food labeling and offering more high fiber, low-fat foods.

Evaluation

Measures of physical environmental change were derived from items on the employee survey (i.e. perceived access to healthy foods, perceived access to information, and questions about social support from co-workers and management).

Measure of individual behavioral change came from self-report on surveys.

Key Findings

This intervention was successful in bringing about changes to the physical environments of worksites for nutrition. The intervention did not lead to an increase in adoption of healthier catering policies. Employees reported perceiving more access to and support of healthy eating opportunities.

The Shape Up Challenge: a community-based worksite exercise competition.

Reference

Blake, S. M., Caspersen, C. J., Finnegan, J., Crow, R. A., Mittlemark, M. B., & Ringhofer, K. R. (1996, September-October) The shape up challenge: a community-based worksite exercise competition. *American Journal of Health Promotion*. 11(1) 23-24. Abstract retrieved June 26, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

Three intervention communities were targeted to reduce behavioral risk for cardiovascular disease as part of the Minnesota Heart Health Program annual exercise campaigns between 1982 and 1989. A worksite exercise competition was designed in conjunction with other campaign activities to increase levels of physical activity. This competition was called the *Shape Up Challenge*. In two communities a total of 119 participating companies and 17,626 employees within these worksites were subjects of the study.

Intervention methods included:

- invitation to eligible worksites to participate;
- participation by employees in a month-long competition;
- record by employees of minutes spent daily in aerobic activities;
- use of incentives to promote
 - intragroup cooperation, and
 - intergroup competition;
- competition for awards by companies based on the average minutes of exercise per employee versus per participant.

Evaluation

Measurements on implementation logs included:

- numbers of companies recruited and participating,
- campaign activities,
- minutes of exercise, and
- costs.

Surveys were completed by companies describing:

- business type,
- number and sex of employees,
- existing health promotion programs, and
- perceived benefits of participation.

Key Findings

- There was a 33% participation rate (range 15% to 50%) of the 365 companies invited to be a part of the program.

- Health promotion programs were more likely to be offered by participating companies rather than non-participating companies. The perception of greater benefits from participation also was indicated more with participating companies.
- Greater participation rates were more significant with women and smaller companies than with men and larger companies.
- Average participation rates of employees ranged as:
 - high as 84% in smaller organizations, and
 - low of 16% as organization size increased.
- Worksite exercise competitions that are community-based appear to be a viable strategy for the promotion of employee exercise especially in smaller companies.
- Contingencies that are group-based and applied in natural work units may facilitate employee participation.

Lessons Learned

Additional research is needed to:

- assess the relative efficacy of this approach,
- compare alternative incentives, and
- identify strategies to enhance exercise maintenance after the intervention is completed.

Worksite-based nutrition intervention for blue-collar men in Belgium.

Reference

Braeckman, L. et al. (1999) Effects of a low-intensity worksite-based nutrition intervention. *Occupational Medicine*. 49(8), 549-555.

Environmental Intervention and Policies

The setting for the intervention was blue-collar, worksites (four with 250-500 workers) in Belgium. Blue-collar, mostly white, male employees were in the targeted population.

Worksites were randomly assigned to intervention and control. The program was designed to help participants' lower fat and cholesterol intake. The education program lasted three months and was implemented after the baseline screening in the two intervention worksites. Mass media was used to explain the relationship between diet and heart disease. Intervention mediums included posters, leaflets, a video followed by a question and answer period, and more. In addition, a 2-hour educational session was offered several times at the worksite, outside of working hours. The educational sessions were small groups (20-30 participants) and were led by dietitians. They were meant to increase knowledge and skills in choosing and preparing foods low in fat, saturated fat, and cholesterol. To reinforce messages, a newsletter was distributed near the end of the campaign.

Evaluation

Baseline and post-intervention assessments were conducted. The measures used consisted of demographics, smoking habits, physical activity (PA), and medical history. All were self-administered. In addition, medical examinations were conducted at baseline. Dietary habits were assessed via 24-hour recall by trained nutritionists. Nutrition knowledge and attitudes were also assessed via questionnaire. Participants were informed of the results of their health checks within two weeks of screening.

Key Findings

The authors reported that nutrition knowledge scores increased significantly in the intervention group. They also reported there was a net reduction in total calories and in the percentage of energy from fat. Overall, there were no changes in mean total blood cholesterol or fatty acids. They reported that for hypercholesterolemic patients there was a significant decrease in blood cholesterol.

5 A Day Peer Health Educator Program for public sector and trades employees.

Reference

Buller, D., et al. (2000) Implementing a 5 A Day Peer Health Educator Program for public sector labor and trades employees. *Health Education and Behavior*. 27(2), 232-240.

Environmental Intervention and Policies

The targeted population included public sector employees at ten worksites which included the public sector settings of city and county government, public schools, community colleges, and universities.

There were 42 employees known for being opinion leaders in their peer groups, who were selected and trained by project staff to be peer educators. They were instructed to provide nutrition education to their coworkers for about 2-hours per week. Managers allowed peer education to happen during work time. In addition, peer educators distributed specially produced 5 A Day materials – a 9-booklet resource guide, four issues of a newsletter, and a “collection of enabling gifts” (e.g. recipe book, vegetable seeds, etc.). Peer educators received a stipend of \$1,800.

Evaluation

A variety of measures were used in this project:

- implementation measures:
 - peer educator logs on coworker contacts, and
 - peer educator’s descriptions of influence strategies;
- reach measures:
 - employee’s exposure to printed materials (via survey), and
 - employee’s reports of peer educator contacts (via survey);
- use measure:
 - employee’s discussions with coworkers and family members (via survey), and
 - association between program exposure and fruit/vegetable intake (assessed via coworker contacts and pre/post surveys of fruit/vegetable intake).

Key Findings

- Contacts with employees totaled 9,182.
- Nearly all employees reported having contact with the peer educators at least once; most reported the contacts as positive experiences.
- About half reported reading the booklets, and newsletters, and about a third reported sharing the materials and information with the spouses and families.
- Peer educators continued to function after the official intervention was over.
- Increases in fruit/vegetable intake were associated with the number of peer contacts, but not significantly.
- Peer educator contacts were significantly associated with increases in vegetable intake individually.

Meta-evaluation of worksite health promotion economic return studies.

Reference:

Chapman, Larry S. (2003, January/February) Meta-evaluation of worksite health promotion economic return studies: *The Art of Health Promotion*: 6 (6), 1-10.

Environmental Intervention and Policies

A meta-analysis of peer review literature regarding the economic impact of worksite health promotion programs was conducted and results reported in this article.

Evaluation

Included for analysis were all studies reporting program evaluations that met the following criteria:

- multi-component programming,
- workplace setting only,
- reasonable rigorous study design,
- original research,
- focus on economic variables,
- published in peer-reviewed journals,
- use of statistical analysis,
- adequate sample size,
- replicable interventions, and
- minimum length of intervention period.

Forty-two (42) studies were found that met these criteria.

Key Findings

Results showed that:

- There is a lack of standardization in the methodology used in economic analysis of worksite health promotion programs.
- There is a wide range of quality and rigor in the literature.
- About half of the studies were published after 1992.
- More recent studies had larger average effects and higher cost-benefit yields.
- Health care costs will likely remain the most frequent economic variable in future program studies.
- Sick leave effects were the second most prevalent economic variable used to examine the economic impact and return associated with worksite health promotion programs.
- Most studies examined a single economic variable, thus likely underestimating the return of a program.

The author concluded that worksite health promotion represented one of the key strategies for maintaining the productivity of American workers at a time when their average age is increasing faster than others in the world.

Health behavior change programs adapted for individual needs are strongly recommended to increase physical activity.

Reference

Division of Nutrition & Physical Activity, Centers for Disease Control and Prevention. (2002, December 26) Health behavior change programs adapted for individual needs are strongly recommended to increase physical activity. The Guide to Community Preventive Services (Community Guide) retrieved (n.d.) from www.thecommunityguide.org/pa/.

Additional referenced publications:

Increasing physical activity. A report on recommendations of the Task Force on Community Preventive Services. (2001, October 26) *Morbidity & Mortality Weekly Report/Recommendations and Reports*. A report on findings. 50(RR18).

A report on evidence and findings (2002) *American Journal of Preventive Medicine*. 22(4S), 73-102.

Environmental Intervention and Policies

“Regular physical activity is associated with a healthier, longer life. Physically active people have a lower risk of heart disease, high blood pressure, diabetes, obesity, and some types of cancer. Despite all the benefits of physical activity, most people in this country are sedentary. Given that regular physical activity helps people enjoy better health, an important question is: what strategies work best in helping people become more physically active?”

A systematic review of published studies, conducted on behalf of the Task Force on Community Preventive Services by a team of experts, found that individually-adapted health behavior change programs are effective in getting people to be more physically active. Based on this review, the Task Force issued a strong recommendation to implement such programs.”

The following summarizes the background on the interventions:

- *“Individually-adapted health behavior change programs teach behavioral skills to help participants incorporate physical activity into their daily routines. The programs are tailored to each individual’s specific interests, preferences, and readiness for change.*
- *These programs teach behavioral skills such as:*
 - 1) *goal-setting and self-monitoring of progress toward those goals,*
 - 2) *building social support for new behaviors,*
 - 3) *behavioral reinforcement through self-reward and positive self-talk,*
 - 4) *structured problem solving to maintain the behavior change, and*
 - 5) *prevention of relapse into sedentary behavior.*
- *All of the evaluated interventions were delivered to people either in group settings or by mail, telephone, or directed media.”*

Key Findings

The findings from the systematic review included:

- *“In all 18 studies reviewed, individually-adapted health behavior change programs were effective in increasing physical activity as measured by various indicators.*

- *The median estimates from the reviewed studies suggest that individually-adapted health behavior change programs can result in a 35% increase in the amount of time people spend being physically active and a 64% increase in energy expenditure.*
- *Other measures of physical activity, such as the percentage of people starting exercise programs and the frequency of physical activity, also increased as a result of these programs.*
- *These interventions were effective among both men and women and in a variety of settings, including communities, worksites, and schools. If appropriately adapted to the target populations, these interventions should be applicable to diverse settings and groups”.*

A public health model for cardiovascular risk reduction. Impact of cholesterol screening with brief nonphysician counseling.

Reference

Gemson, D. H., Sloan, R. P., Messeri, P., & Goldberg, I. J. (1990, May) A public health model for cardiovascular risk reduction. Impact of cholesterol screening with brief nonphysician counseling. *Archives of Internal Medicine*. 150(5), 985-989. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

The study examined the impact of cholesterol screening with brief nonphysician counseling on cardiovascular risk factors with the targeted population of employees at a large financial services firm.

As reported, the intervention methods with 886 employees included a:

- fingerstick screening followed by a brief 3- to 5-minute counseling by a registered nurse;
- 6-month follow-up which assessed:
 - total cholesterol,
 - weight,
 - blood pressure, and
 - smoking;
- randomized experiment with 137 participants initially classified with having “borderline-high blood cholesterol” level.

Evaluation

Results of the:

- 6-month follow-up included significant declines in:
 - total cholesterol levels (5.9 to 5.5 mmol/L, 228 to 213 mg/dL),
 - weight (78 to 75 kg),
 - blood pressure (119/78 to 115/75 mm Hg), and
 - people reporting smoking (16.8% to 14.5%) among participants with a baseline cholesterol value of 5.2 mmol/L (200 mg/dL) or greater;
- cholesterol measurement and brief counseling at 2-, 4- and 6-months through a randomized experiment indicated:
 - significantly greater dietary change, and
 - a trend toward greater declines in total cholesterol compared with participants receiving follow-up at 6-months only.

Key Findings

The results of the study:

- support feasibility and efficacy of cholesterol screening utilizing brief nonphysician counseling on multiple cardiovascular risk factors; and
- suggest an enhanced effect when patients receive more frequent follow-up.

Community Intervention Trial for Smoking Cessation (COMMIT).

Reference

Glasgow, R. E., Cummings, K. M., & Hyland, A. (1997) Relationship of worksite smoking policy to changes in employee tobacco use: findings from COMMIT. *Tobacco Control*. 6(suppl 2), S44-S48.

&

Glasgow, R. E., Sorensen, G., Giffen, C., et al. (1996) Promoting worksite smoking control policies and actions: the Community Intervention Trial for Smoking Cessation (COMMIT) Experience. *Preventive Medicine*. 25, 186-194.

Additional reference:

Fichtenberg, C. M., & Glantz, S. A. (2002) Effect of smoke-free workplaces on smoking behaviour: systematic review. *BMJ*. 325, 188-194.

Environmental Intervention and Policies

The *COMMIT* study, the largest smoking cessation trial conducted, focused on worksites along with several other key intervention channels. The 4-year (1989-1992) trial incorporated a variety of interventions to encourage smokers, in particular heavy smokers, to quit and/or maintain cessation.

Selected were 22 *COMMIT* communities and matched based on having a population in 1990 between 49,421 and 251,208 and being distributed across North America. One community within each matched pair was randomly selected to implement a comprehensive tobacco use intervention program and the other served as a control.

Intervention communities were encouraged to adopt/strengthen worksite smoking policies and to provide smoking cessation resources for employees. Worksite interventions included the following major activities:

- smoking policy presentations, workshops, and consultations;
- establishment of a worksite smoking policy network;
- encouragement of worksite stop-smoking contests and competitions;
- distribution of self-help stop-smoking materials;
- efforts to involve worksites in community-wide events such as the *Great American Smokeout* and *Quit and Win* contests; and
- promotion of a community-wide Smoker's Network to employees.

Evaluation

The *COMMIT* trial was one of the first trials to demonstrate that implementing smoke-free policies in the workplace can effectively reduce smoking consumption among employees. This finding was further confirmed by a recent meta-analysis of the effects of smoke-free workplaces on smoking in employees.

Effect of Smoke-free Workplaces on Employee Smoking

Fichtenberg and Glantz conducted a meta-analysis that quantified the effects of smoke-free workplaces on smoking in employees. The authors reviewed 26 studies on the effects of totally

smoke-free workplaces, and measured their impact on daily cigarette consumption (per smoker and per employee) and smoking prevalence.

Implementation of totally smoke-free workplace policies was associated with a reduction in absolute prevalence of smoking of 3.8% and a decrease in consumption of 3.1 cigarettes per day per continuing smoker. Furthermore, a combination of the effects of stopping smoking (lower prevalence) and the lower consumption of cigarettes per continuing smoker meant that 1.3 fewer cigarettes were smoked per day per employee (smokers and non-smokers), which corresponded to a 29% relative reduction.

Furthermore, the authors discovered that when comparing totally smoke-free workplaces to workplaces that allowed smoking in some areas, totally smoke-free workplaces had about twice the effect on consumption of cigarettes and prevalence of smoking. At this rate, if all workplaces in the US were to become smoke-free, consumption per capita (for the entire adult population) would drop by 4.5%.

Key Findings

After controlling for potential confounding factors, their analysis suggests that employees who worked in a smoke-free worksite were over 25% more likely to make a serious quit attempt between 1988 -1993, and over 25% more likely to quit than those who worked in a worksite that permitted smoking.

Among smokers who did not quit, smoke-free policies reduced consumption as well. Smokers on average consumed $2\frac{3}{4}$ fewer cigarettes per day when they worked in smoke-free workplaces.

Lessons Learned

This study suggests strong evidence in support of totally smoke-free workplaces in order to influence prevalence of smoking and consumption of cigarettes among employees. This study is one of the first of its kind to demonstrate that implementing worksite policies can have a large impact on risk factors for cardiovascular disease (CVD) among employees.

Take Heart Project

Reference

Glasgow, R. E., Terborg, J. R., Hollis, J. F., et al. (1995) Take Heart: Results from the initial phase of a work-site wellness program. *American Journal of Public Health*. 85, 209-216.

Environmental Intervention and Policies

Conducted in the early 1990's, the goal of the *Take Heart Project* was to influence risk factor change among employees in a large number of worksites through low-cost organizational and policy interventions. Many of these interventions were implemented by employee steering committees at each worksite.

The *Take Heart Project* evaluated 26 worksites ranging in size from 125-750 employees. These worksites were matched on:

- the type of industry they were in,
- the number of employees they had, and
- a composite variable that reflected their level of employee participation in baseline assessments and the extent to which companies had previously offered health promotion activities.

The worksites were randomly assigned within their matched pairs to either an early intervention or delayed intervention.

Interventions included a list of nutrition and tobacco use activities on the *Take Heart Menu* (Table 1). Each worksite was encouraged to conduct two activities per cell in the *Take Heart Menu* during a two-year intervention period. These activities were implemented by an employee steering committee that met monthly, selected and publicized the events, engaged coworkers, and lobbied for changes in worksite health promotion policies.

Table 1: Take Heart Menu

Focus Area	Interventions	Study Design	Documented Effects	Overall Rating
Hypertension	Screening, treatment, long-term monitoring; group education and training	35% experimental design	Decrease BP, increase knowledge	Conclusive
Multi-component Programs	Screening, personalized feedback based on results of screening, modifications in organizational policy or physical work environment	25% experimental design	Multiple outcomes including improved health risks and absenteeism rates	Acceptable/ Indicative
Weight Control	Behavior modification, education topics, and incentive system	18% experimental design	Weight loss, decrease attrition	Indicative
Stress Management	Progressive relaxation, meditation, biofeedback, cognitive-behavioral skills, or combination	53% experimental design	Decrease blood pressure and anxiety, increase job satisfaction	Indicative
Nutrition/ Cholesterol	Nutrition: group education and individual counseling, cafeteria-based, group	42% experimental design	Nutrition: attitude and dietary change, decrease cholesterol level.	Indicative/ Suggestive

	education. Cholesterol: individual counseling, group education, media, combination of all three		Cholesterol: decrease cholesterol level and weight, dietary change	
Smoking	Cessation programs *Group and incentive programs **Minimal interventions, competitions, and medical interventions ***Testing of treatment components ****Policy interventions	44% experimental design	Increase quit rates, decrease consumption, change in smoking status, reduced exposure to smoke in work area	Suggestive* Indicative** Acceptable*** Weak**** (due to study design)
Exercise	Self-regulated program, fitness class, programs include compliance strategies	10% experimental design	Decrease weight, skinfolds, percent of body fat, total cholesterol, smoking level, and absenteeism; increase muscle strength and endurance, life satisfaction and well-being	Suggestive

Key Findings

The *Take Heart Project* utilized the *Stage of Change Model* by acknowledging that interventions should address the stage that individuals are in when influencing behavior change. For individuals in a pre-contemplation or contemplation stage, interventions focused on stimulating consideration of the risks of high cholesterol and smoking and ways to reduce those risks by making changes in nutrition and tobacco use behaviors. For individuals in later stages, interventions focused on providing assistance in altering dietary and/or tobacco use behaviors and in maintaining those healthy behaviors.

Early and delayed intervention conditions, the authors noted, did not differ in changes in smoking rates, dietary intake, or cholesterol levels. They noted that variability in outcomes among worksites within each condition was one of the primary factors contributing to these results.

Lessons Learned

The *Take Heart Menu*, the authors noted, may not have been structured enough to result in consistent outcomes. In addition, steering committee composition had large variation across worksites and in level of activity. Finally, the level of intervention may have been too weak to overcome larger social or contextual factors. While there may have been some individual-level advantages to the flexibility of the *Take Heart Menu*, organization-wide change may require more vigorous levels of interventions.

The long-term impact of Johnson & Johnson's Health & Wellness Program on employee health risks.

Reference

Goetzel, R. Z., Ozminkowski, R. J., Bruno, J. A., Rutter, K. R. Isaac, F., & Wang, S. (2002, May) The long-term impact of Johnson & Johnson's Health & Wellness Program on employee health risks. *Journal of Occupational and Environmental Medicine*. 44(5), 417-424. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

The setting for the study was with corporate health promotion and disease prevention programs used with Johnson & Johnson employees. The programs included:

- Johnson & Johnson's Health & Wellness Program, newly configured, as the setting for a study which reduced the health risks of 4,586 employees who participated in two serial health screening programs. There was a minimum of 1-year between screenings.
- *Pathways to Change*, a high-risk intervention program, focusing on health risk factors was also examined for impact of participation.

Evaluation

Methods of evaluation included McNemar chi-square and z test statistics which were used to evaluate changes in health risks over time.

Key Findings

The following highlights the results of the study:

- Employees participating in the health risk assessments
 - significant reduction in 8 of the 13 risk categories was shown over an average of 2 ³/₄ years;
- *Pathways to Change* participants compared with non-participants
 - participants outperformed their non-participant counterparts in six categories, and
 - participants performed worse in five other categories that were not specifically targeted by the high-risk program.

Additional Comments

The ability of large-scale, well-attended and comprehensive corporate health and productivity management programs to positively impact the health and well-being of workers is illustrated through the results of this study.

Association of IBM's *A Plan for Life* health promotion program with changes in employees' health risk status.

Reference

Goetzel, R. Sepulveda, M, Knight, K., Eisen, M., Wade, S., Wong, J., & Fielding, J. (1994, September) Association of IBM's "A Plan for Life" health promotion program with changes in employees' health risk status. *Journal of Occupational Medicine*. 36(9), 1005-1009. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

An evaluation of the association of participation in IBM's *A Plan for Life* program was undertaken. Over a 1- to 5-year period, program participants and non-participants initially found to be at risk were measured and compared for changes in:

- blood pressure,
- serum total,
- high-density lipoprotein cholesterol (HDL),
- body mass index (BMI), and
- cigarette smoking.

Key Findings

"After adjustment for age, sex, time to follow-up, and baseline values, the proportion of participants no longer at high risk was significantly greater than the corresponding proportion of non-participants in the areas of blood pressure total and non-high-density lipoprotein cholesterol and smoking cessation."

The Lucent-Takes-Heart cardiovascular health management program.

Reference

Guico-Pabia, C. J., Cioffi, L., & Shoner, L. G. (2002, August) The Lucent-Takes-Heart cardiovascular health management program. *American Association of Occupational Health Nurses Journal*. 50(8), 365-372. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

The targeted population for the worksite cardiovascular health management program was for all employees with a target population follow-up for high risk participants. The cardiovascular health management program intervention included:

- employee education,
- measurement of cardiovascular risk factors,
- onsite individual counseling for all employees, and
- follow-up screening for high risk participants.

Of the targeted population, 1,099 employees (16.4% of those eligible) participated in the initial screening. Classified as high risk were 596 employees representing 54.2% of the targeted population participating in the intervention. Completing the 6-month follow-up screening were 167 (28%) of the high risk participants.

Evaluation

A pre-and post-evaluation was conducted of the program. Of the high risk participants completing a 6-month follow-up screening, they reported the following:

- 64.7% increased exercise,
- 71.3% improved their diet,
- 61.7% visited a physician,
- 16.8% began new cardiovascular medications,
- 2.4% were diagnosed with diabetes, and
- significant decreases in the percentages of participants with elevated:
 - systolic blood pressure,
 - diastolic blood pressure,
 - low density lipoprotein cholesterol, and
 - total cholesterol to high density lipoprotein ratio.

Of the 909 participants (82.7% of all participants) completing the survey, 99.7% indicated they were satisfied or very satisfied with the overall program.

Key Findings

Workplace screening can identify employees at high risk for cardiovascular disease as illustrated through this study with more than half of the participants being identified as high risk.

Lessons Learned

“Most high risk individuals who attended the 6-month follow-up screening had improved their cardiovascular health, but attrition remains a challenge for worksite programs.”

Are employees who are at risk for cardiovascular disease joining worksite fitness centers?

Reference

Hearney, C. A., & English, P. (1995, June) Are employees who are at risk for cardiovascular disease joining worksite fitness centers? *Journal of Occupational and Environmental Medicine*. 37(6), 718-724. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

Environmental Intervention and Policies

The population for this study was with 294 newly hired employees at a large insurance company in the Midwest.

Reasoning behind the study included the following:

- To effectively serve disease prevention purposes, worksite fitness centers need to attract a large proportion of eligible employees who are at risk for cardiovascular disease (CVD).
- There has been an inconsistency and, to a certain extent, methodologically flawed, history of previous studies linking risk factor status and the tendency to join worksite fitness centers.

Evaluation

The measurement methods included the determination of:

- risk factor status during their orientation week, and
- whether employees joined the fitness center during their first year of employment.

Key Findings

“Overall risk factor status had little impact on employees’ decisions to join the worksite fitness center. However, two of the risk factors (being 20% or more overweight and having elevated systolic blood pressure had opposite influences on the decisions of male and female employees.”

Work-site physical fitness programs. Comparing the impact of different program designs on cardiovascular risks.

Reference

Heirich, M. S., Foote, A., Erfurt, J. C., & Konopka, B. (1993, May) Worksite physical fitness programs. Comparing the impact of different program designs on cardiovascular risks. *Journal of Occupational Medicine*. 35(5), 510-517. Abstract retrieved June 26, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

Environmental Intervention and Policies

An examination of the impact of three different approaches to physical fitness at the worksite on cardiovascular risk reduction was studied. The intervention approaches identified in the study included:

1. a staffed physical fitness facility;
2. one-to-one counseling with at-risk employees;
3. combination of one-to-one counseling with employees plus organization of the worksite to encourage peer support and mutual exercise activity at work; and
4. a control site as the fourth site.

Evaluation

Measurements in the different approaches showed the following results:

- staffed physical fitness facility showed little measurable impact on cardiovascular risks and had results similar to those at the control site;
- one-to-one counseling with at-risk employees was more effective than the staffed physical fitness facility only; and
- combination of one-to-one counseling with employees plus organization of the worksite was more effective than the other approaches providing the best health outcomes in frequency of exercise, blood pressure control, weight loss, and smoking cessation.

Key Findings

“Systematic and on-going outreach to enlist employees in various types of exercise programs is more effective than the presence of fitness facilities without such outreach. Moreover, significant increases in frequency of exercise can be sustained without a substantial investment in facilities.”

LIFECHECK: a successful, low touch, low tech, in-plant, cardiovascular disease risk identification and modification program.

Reference

Henritze, J. Brammell, H. L., & McGloin, J. (1992, November-December) LIFECHECK: A successful, low touch, low tech, in-plant, cardiovascular disease risk identification and modification program. *American Journal of Health Promotion*. 7(2), 129-136. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

Environmental Intervention and Policies

The targeted population for *LIFECHECK* was with 1,320 employees located at the Coors Engineering Center and Can Manufacturing Complex at the Coors Brewing company of Golden, Colorado. The voluntary, in-plant cardiovascular risk identification and medication program, *LIFECHECK*, was developed to complement the Coors Wellness Center-based programs.

The intervention methods included:

- initial 30-minute screening with:
 - height,
 - weight,
 - blood pressure,
 - cholesterol,
 - smoking history,
 - weekly kcal expenditure,
 - self-rating of health, and
 - health effects of stress;
- reviewal of the results following the screening by a wellness counselor and referral to appropriate intervention activities;
- eight-week intervention was provided to all shifts at the worksite and included:
 - an activity competition and activity classes;
 - nutrition, hypertension, smoking, and lipid classes;
 - smoke-out day;
 - one-on-one counseling; exercise equipment at four worksites; and
 - posters, tray mats, table tents, and electronic messages.

Evaluation

Participation in the initial screening was with 692 employees, that represented 52% of those eligible. Of the employees screened:

- 91% had one or more risk factors;
- 33% had three to five cardiovascular disease risk factors; and
- 72% (total of 499 of those eligible) completed the follow-up screening.

Key Findings

- It was discovered through the intervention that 32% of the employees who participated in the *LIFECHECK* program had not used the Wellness Center in the eight years it had been open.
- Significant changes were measured in employees who completed the 8-week program for:
 - systolic blood pressure,
 - total cholesterol,
 - weight,
 - physical activity, and
 - risk for ischemic heart disease within eight years.

Efficiency of printed materials in worksite health promotion.

Reference

Kishchuk, N., Anbar, F., O'Loughlin, J., Masson, P., & Sacks-Silver, G. (1991, May-June) Efficiency of printed materials in worksite health promotion. *American Journal of Health Promotion*. 5(5), 355-359. Abstract retrieved June 26, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

A heterogeneous sample of worksites was the setting for a study on the efficiency of cardiovascular health promotion leaflets in reaching employees. The intervention method included two types of distribution of the promotion leaflets. This was done with copies of the leaflets:

- made available centrally, or
- distributed to each individual employee.

At the six worksites, 272 employees were interviewed. The respondents of the interview were asked about whether they:

- recognized the leaflets,
- read the leaflets, and
- learned something from the leaflets.

Evaluation

Results of the interviews indicated that 25% of respondents recognized the leaflets with only 14% revealing they learned something. The efficiency of the leaflets was therefore much lower than expected.

The study also revealed through z tests for proportions, that recognition, reading and learning were significantly greater among the employees who had been given individual copies of the material. The individuals given individual copies of leaflets reported:

- 45% recognizing the material,
- 36% reading the material, and
- 23% learning something from the material.

The individuals who had only central access to the material had the respective scores of 11% recognizing it, 7% reading it, and 6% learning something from it.

Key Findings

Potential cost-effectiveness of printed materials such as leaflets and brochures should be weighed against alternative forms of intervention, given the specific program objectives and characteristics of the target population.

Lessons Learned

Cost and effort required in organizing the distribution of individual copies may be recouped in greater penetration as suggested by the study results.

Nutrition promotion activities including the use of a Health Handbook (HHB) on offshore oil rigs in Norway.

Reference

Oshaug, A., et al. (1995) Nutrition promotion and dietary change at offshore oil installation in the Norwegian sector of the North Sea. *European Journal of Clinical Nutrition*. 49(12), 883-896.

Environmental Intervention and Policies

The targeted population for the intervention included 194 healthy Norwegian men who were offshore oil workers. The setting was with offshore oil rigs.

This was a relatively simple intervention. It consisted of an offshore rig medical office handing out Health Handbooks (HHBs) to men working on oil rigs. The HHB had four sections that focused on blood pressure (BP), cholesterol, smoking, obesity, and physical activity (PA). The HHB included dietary recommendations including decreasing dietary fat and cholesterol intake; and increasing the intake of cereals, fish, vegetables, fruit and low-fat milk. It also allowed the user to calculate a heart attack risk score (as described by Bjartveit et al 1979).

Evaluation

Methods of evaluation included:

- two independent X-sectional surveys were conducted in 1985 and 1993, (self-report of diet intake and socio-economic status, SES) using open-ended and structured interviews and questionnaires;
- the surveys were collected by nutritionists and included data collection on 24-hour recall of dietary intake using food models; and
- food availability on the rigs was estimated using invoices or list of foods purchased over a 5-month period.

Key Findings

According to the authors, between 1985 and 1993 the mean intake of food and nutrients changed in the direction recommended by the Norwegian National Nutrition Council and the HHB. Fat intake was 12% lower in 1993; 56% of the workers said they changed their diet since 1985. Those who changed their diets reported eating more cereals, fruits, low fat milk, and fruit juice, they also had a lower percentage of calories from fats and less dietary cholesterol. Reportedly, 70% who received the HHB changed their diets. The authors make the interesting point that, “*Platforms producing oil in the North Sea provide a setting in which a number of factors which otherwise vary substantially are stable or vary little, such as food availability, meal pattern and restaurants* (pg. 884).”

The cardiovascular health impact of an incentive worksite health promotion program.

Reference

Pescatello, L. S., Murphy, D., Vollono, J., Lynch, E., Bernene, J., & Costanzo, D. (2001, September-October) 1 The cardiovascular health impact of an incentive worksite health promotion program. *American Journal of Health Promotion*. 6(1), 16-20. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

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Environmental Intervention and Policies

Cardiovascular health profiles of benefit-eligible hospital employees who participated in an incentive screening program for four years were examined. Also examined was if cardiovascular health changes differed between:

- participants (CHAP);
- those enrolled in structured follow-up risk reduction programs (CHAPplus); and
- those who chose less formal options (CHAPonly).

The intervention methods with CHAP consisted of:

- cardiovascular screens,
- results counseling, and
- encouragement to participate in education and behavioral support programs.

Evaluation

Cardiovascular health changes (after adjusting for gender, medication use, and baseline levels of adiposity and physical activity) were tested with repeated-measures analysis of covariance (ANCOVA) with CHAP participants and by CHAP type.

Key Findings

“Cardiovascular health improvements were associated with long-term participation in a hospital worksite incentive screen program. Cardiovascular health benefits were greatest with CHAP employees who chose informal follow-up risk reduction options (CHAPonly) than those who enrolled in structured programs (CHAPplus).” Although the improvements in most of the cardiovascular health indicators showed the CHAPonly employees showed greater improvements than the CHAPplus employee participants; it was indicated these differences did not achieve statistical significance.

Wellness Works: Part of the Albert Heart Health Project.

Reference

Project 8 – Wellness Works. (1997, December 15) G8 database project summary retrieved (7/9/2004) from Canadian Heart Health Database Centre, Memorial University, St. John's, NF, <http://www.med.mun.ca/g8hearthealth>.

Environmental Intervention and Policies

The targeted population for each year was 200 employees working in the Department of Parks and Recreation in the City of Edmonton, Canada. The worksite setting was with municipal employees.

The intervention was an overall cardiovascular health (e.g. measuring diet, exercise, smoking cessation, obesity, cholesterol, and high blood pressure) worksite health promotion/prevention effort.

The program included yearly screening and counseling for risk factors and an incentive program. Intervention and activity strategies included:

- making healthy public policy,
- strengthening preventive health services,
- social marketing,
- classes/workshops,
- screening for risk factors,
- forming advisory committees,
- conducting a needs assessment,
- producing resource materials, and more.

The employee incentive was a 50% discount on a membership to all city recreation centers.

Evaluation

This program was evaluated using a quasi-experimental study design with a non-randomly selected control group. Data on employee participation was collected. Participant knowledge, behavior and satisfaction were measured with questionnaires. Participants were screened for cardiovascular disease (CVD) risk factors at the yearly screening events.

Key Findings

Findings from the study included:

- high percentage of employees participated;
- participants reported a high level of satisfaction with the program activities;
- results suggested improvements in systolic blood pressure (BP) and high density lipoprotein (HDL); and
- results suggest reduced absenteeism for participants.

Additionally, the dissemination of the project was throughout Edmonton City Government and the program was funded through the City. There was a high demand from other organizations to learn more about the program.

Worksite heart beat checks, heart styles, environmental support and policy initiatives program.

Reference

Project 47 –Worksite heart beat checks, heart styles, environmental support and policy initiative program. (1998, April 16) G8 database project summary retrieved (7/9/2004) from Canadian Heart Health Database Centre, Memorial University, St. John's, NF, <http://www.med.mun.ca/g8hearthealth>.

Environmental Intervention and Policies

The targeted population included 1,000 adult employees in urban Ontario, Canada.

This program was part of a larger initiative, based on Health Canada's Workplace Health Model, to improve the health of employees in urban Ontario. This was accomplished using the following strategies:

- cardiovascular disease (CVD) risk factor screening stations, "Heart Checks";
- skill building sessions;
- enactment of heart healthy policy in the workplace (e.g. cafeteria programs and no smoking laws, etc).

Some activities included starting walking clubs and support groups; conducting an educational campaign; running contests and hosting workshops and classes.

Evaluation

The authors did not clearly report the methods used to evaluate this program. They stated their objectives were to do a comparative survey only of Heart Checks, versus a combined Heart Checks and Heart Styles (follow-up), and to do a check for program satisfaction. The methods they reported were: "diffusion study" and "smoking stages of change now under review".

Key Findings

The authors recounted they found more behavior changes reported by persons participating in the "Heart Checks" with a follow-up, than those only participating in the initial "Heart Checks". Also reported by the authors, "*On a continual basis, requests for program information from across Ontario, Canada and beyond are filled.*"

Cooperation and collaboration between a public health unit and midsized private industry in health promotion programming: the Polymer Heart Health program experience.

Reference

Shoveller, J. A., & Langille, D. B. (1993, May-June) Cooperation and collaboration between a public health unit and midsized private industry in health promotion programming: the Polymer Heart Health program experience. *Canadian Journal of Public Health*. 84(3), 170-173. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

Environmental Intervention and Policies

The targeted population included employees at a worksite of Polymer International, a plastics manufacturer.

Partnering with the Cobequid Health Unit, Nova Scotia, Polymer International began planning for a worksite cardiovascular risk factor screening and a follow-up program in 1990. The screening began in 1991 with 302 Polymer employees (89.1%) participating. The follow-up program included:

- smoking cessation programs;
- fitness opportunities, dietary counseling; and
- physician referral for blood pressure and cholesterol levels.

Evaluation

As a result of the health promotion program, the following policy and environmental changes occurred:

- heart healthy foods were provided at the cafeteria;
- non-smoking policy was developed; and
- dietary counseling coverage was included under the corporate group insurance plan.

Key Findings

The program illustrated the potential for public health and private industry to collaborate in preventive efforts.

Worksite Wellness Trial.

Reference

Sorensen, G., Thompson, B., Glanz, K., et al. (1996) Work site-based cancer prevention: primary results from the Working Well Trial. *American Journal of Public Health*. 86(7), 939-947.

&

Biener L, Glanz K, McLerran D, et al. (1999) Impact of the Working Well Trial on the worksite smoking and nutrition environment. *Health Education and Behavior*. 26(4), 478-494.

Environmental Intervention and Policies

The largest U.S. worksite cancer prevention trial to date, the *Worksite Wellness Trial* implemented smoking and nutrition interventions through Employee Advisory Boards in 114 worksites and over 28,000 employees.

Worksites were matched on presence of a cafeteria, worksite size, type of smoking policy, company type, gender distribution, blue- or white-collar predominance, and baseline survey response rate. Randomization occurred within matched pairs. Interventions were implemented with the assistance of Employee Advisory Boards located within each worksite. Interventions focused on influencing the smoking and nutrition environment.

- **Smoking Environment Interventions**
The interventionist and Employee Advisory Boards met regularly with appropriate members of management to assist in the development of smoke-free policies. They focused on the overall effects of smoking rather than on the smoker, sought support of all players at the worksite, planned meetings to explain the policy, and organized a special event to celebrate the implementation of the policy. They also distributed no smoking signs, removed ashtrays, informed visitors of new policies, and enforced the policy.
- **Nutrition Environment Interventions**
Interventions influencing the nutrition environment were dependent on whether worksites had cafeteria or not. Board members and food service personnel were encouraged to assess their particular situations, identify opportunities to change in a more healthful direction, and implement those changes. Where opportunities to obtain food existed at the workplace, attempts were made to make healthy choices more accessible.
- **Individual-level interventions**
The *Worksite Wellness Trial* had an individual-level focus as well. Their theory was that implementing individual-level interventions at the workplace would change the social environment by changing worksite norms related to nutrition and smoking.

Key Findings

- **Nutrition Environment**
Intervention worksites reported more access to fruits and vegetables at work and more access to nutrition information at work. In terms of norms around nutrition, employees

felt the support of their co-workers in their choice of low-fat diets, as well as the concern of management about their nutrition habits.

The study also result in a net reduction in percentage of energy obtained from fat and an increase in fruit and vegetable intake (statistically significant but small differences), but the authors felt these small differences were due to secular trends over this time period.

- **Smoking Environment**

Smokers from intervention worksites reported significantly more encouragement from coworkers to quit than smokers from control worksites. There was no significant effect of the intervention on smoking policy. The Authors concluded that secular trends influenced smoking policies at both intervention and control worksites because both intervention and control worksites increased the restrictiveness of policy considerably.

In terms of actual consumption of tobacco use, the change was in the desired direction but not statistically significant. The authors concluded that the small differences were due to secular trends.

Lessons Learned

Certain changes were easier to accomplish than others. For example, point-of-purchase nutrition labeling of foods in vending machines was easier to achieve than offering low-fat, high-fiber foods in vending machines. This was because the degree of organizational change is greater when it comes to changing the type of food that is offered.

The *Worksite Wellness Trial* offers support for implementing nutrition and smoking environment interventions; however, the authors recommended a program strategy of implementing more simple environmental changes first, followed by those that involve more complex relationships among organizations.

The effect of physician office visits on CHD Risk factor modification as part of a worksite cholesterol screening program

Reference

Wang, J. S., Carson, E. C., Lapane, K. L., Eaton, C. B., Gans, K. M., Lasater, T. M. (1999, March) The effect of physician office visits on CHD Risk factor modification as part of a worksite cholesterol screening program. *Preventive Medicine*. 28(3) 221-228. Abstract retrieved June 13, 2004 from PubMed database, National Library of Medicine, <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi>.

Environmental Intervention and Policies

A study was conducted with an assessment of the impact of a physician office visit after a worksite cholesterol screening on self-reported changes in:

- diet,
- weight loss,
- exercise, and
- smoking.

The targeted population was a cohort of 4,928 participants from 33 worksites in Massachusetts and Rhode Island.

Intervention methods and findings included:

- cholesterol screening with 4,928 participants having baseline cardiovascular heart disease (CHD) risk factors evaluated;
- 6-month follow-up telephone interview with 4,473 participants;
- elevated cholesterol level (≥ 200 mg:/dl) was detected in 1,957 participants and they were:
 - instructed to visit their physician
 - given educational materials related to CHD risk factor modification.

Evaluation

Other CHD risk factors at baseline were self-reported by most individuals with elevated cholesterol levels. These CHD risk factors were self-reported at baseline by respondents:

- 58% self-reported consumption of high-fat diets (>30% fat);
- 43% self-reported being over-weight;
- 60% self-reported a sedentary lifestyle (sweat-related physical activity < 3 times per week); and
- 22% self-reported as cigarette smokers.

After 6-months of follow-up:

- 74% (participants with high-fat diets) reported eating lower fat diet;
- 71% (participants who were overweight) reported weight loss;
- 53% (participants who were sedentary) reported an attempt to increase physical activity;
- 38% (participants who smoked) reported decreased or quit cigarette smoking;
- 35% of participants completed the referral for a physician office visit .

Key Findings

“Findings indicated that the follow-up cholesterol-related physician visit had little added clinical benefit over the screening intervention alone.”