



TOWARD
OPTIMAL
HEALING
ENVIRONMENTS
IN HEALTH CARE

SECOND AMERICAN
SAMUELI SYMPOSIUM

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Table 1

Characteristics of Evaluation of Worksite Health Promotion and Disease Prevention

Study	Purpose of Evaluation	Sample Size	Type of Workers	Comparison Group	Evaluation Period	Outcome Measures	Evaluation Design	Subject Self-selection?	Findings
Canada & North America Life* (1982)	Assess health care utilization changes after institution of employee fitness program	Experimental: 392 Control: 142	Employees at Canada Life who attended 3 fitness evaluations (392 out of 1,487)	Yes	1 Year	Insurance data on hospital admissions and 4 categories of medical claims (CCG, obstetrics, orthopedics, other)	Pre/post with participants vs. nonparticipants	Analyzed costs of participants vs. nonparticipants at same company	Participants had fewer hospital days and fewer medical claims
Tenneco (1984)	Study relationship between exercise and job performance	3,231 Tenneco employees (81% of eligible)	Management: 561 Professional: 1,265 Clerical: 1,078 Other: 327	No	6 Months	Job performance	Compare exercisers to nonexercisers controlling 3 levels of exercise adherence	Self-selected	Exercise and job performance related especially for female, nonexercisers. Positive relation between exercise and job performance for "management" and other categories
Prudential (1984)	Examine impact of worksite-based fitness program on fitness levels, medical costs, and disability costs	Disability study: 184 Major medical study: 121	Most were "white collar" workers, with "secondary" jobs. Only employees enrolled in fitness program	No	Disability: 5 years Medical: 1 year	Disability days, Major medical costs	Pre/post longitudinal design	Self-selected	Fewer disability days (43% less). Lower major medical costs (46% reduction)
Blue Cross/Blue Shield, Indiana* (1985)	Compare health care utilization of participants vs. nonparticipants in worksite health promotion	Participants: 687 Nonparticipants: 892	All headquarter employees of BCBS of Indiana who completed an HRA	No	5 Years	Health care costs determined from claims records	Three month baseline. Participants vs. nonparticipants at 7 time periods	Analyzed costs of participants vs. nonparticipants	Participants had lower health care costs (76%). Program savings rate of 2.51 to 1.00
Blue Cross, California* (1985)	Evaluate health education program aimed at reducing unnecessary outpatient visits	5,191 employees	Employees from 22 employees	Yes	15 Months	Self-reported physician visits	Pre/post "quasi-experimental," "staggered intervention"	Self-selected	Reduced number of visits
Tenneco* (1986)	Compare fitness and absenteeism rates, and medical care utilization rates for exercisers and nonexercisers	Exercisers: 221 Nonexercisers: 296	A one-fifth random sample of employees at 2 Tenneco divisions in Houston, Texas	No	1 Year	Number of sick hours; Medical care utilization rate	Pre/post with participants vs. nonparticipants	Analyzed costs of participants vs. nonparticipants	Participants had fewer sick hours and lower non-hospital costs; Participants had a higher utilization rate
Johnson & Johnson* (1986)	Assess an effort to increase regular exercise as a part of overall "Live for Life" program	Experimental: 2,600 Control: 1,700	All eligible Johnson & Johnson employees at 4 worksites	Yes	2 Years	Daily energy expenditure estimates, maximal oxygen consumption, Self-report and rating of exercise activity	Experimental group received health screen plus program; Control received health screen only	Volunteers plus random sample of nonparticipants at baseline and at two years	Participants had a greater increase in daily energy expenditure in exercise, self-reported ratings
Johnson & Johnson* (1986)	Examine relationships between exposure to a comprehensive worksite health promotion program and health care costs and utilization	Experimental: 5,192 & 3,259 Control: 2,955	In experimental groups, 61% and 56% were salaried; in control, 48% (controlled for in analysis)	Yes	5 Years	Medical costs and utilization	Experimental group 1: program in place more than 30 months; Experimental group 2: 18-30 months; Control: no exposure	Entire worksite	Experimental groups had lower increases in inpatient costs, hospital days, and admissions
Northern Telecom* (1986)	Evaluate "Health Enhancement Program" (HEP) for lifestyle related costs and impact of HEP on lifestyle behaviors	Not available	All Northern Telecom employees	No	1 Year (1984-1985)	Smoking prevalence; Observed seat belt use; Overall medical costs	Pre/post	Self-selected	Lifestyle contributed significantly to medical costs (CHD at 9.5%); Smoking declined from 29% to 16% over 6 months; Seat belt use increased from 45% to 79%; Medical costs remained constant or declined over 1 year. Estimated annual savings of \$3.7 million
AT&T* (1986)	Measure effects of program on employee health status, health-related attitudes, and behaviors toward the company and work	Study sites: 1,198 Comparison: 1,673 & 1,455	Randomly selected employees of AT&T in a Kansas City facility and one entire worksite in Bedminster, New Jersey	Yes	1-Year appraisal only; 1 with no treatment	Biometric data, risk calculations, health- and job-related attitudes, self-reported; Days absent from work	Pre/post with 2 comparison groups	70-82% participation in experimental sites; Selected random samples of controls	Lower health risks; Changes toward more positive attitudes; Gains in positive health behaviors
AT&T* (1987)	To determine the reduction of aggregate risks (and associated costs) for cancer and heart attack over the 2-year study period	Experimental: 1,623 Control: 1,673	Wage and salaried	Yes	2 Years	Health risk appraisal; Smoking rates; Exercise levels	Quasi-experimental at two worksite locations and one control site	Entire worksite	TLC participants reduced health risks; Physical exercise increased; Smoking decreased; Cost benefit of \$312.2 million if TLC reached all 100,000 AT&T employees
Control Data* (1987)	Assess impact of the CDC "StayWell" program on risk status, medical costs, utilization, and absenteeism	Demographics on 50,000 employees; participant records on 35,000; HRA on 12,000 claims data and absenteeism data on 17,000	All CDC employees	No	6 Years (1980-1986)	Participation and adherence, risk factors, medical costs, costs and benefits of programs	Link HRA, employee health surveys with claims and personnel records with subsequent use and costs of medical care	Non-random samplings and self-selection bias	Reduced claims and absenteeism; Smokers evidenced 18% higher medical costs; Hypertensives are 86% more likely to have annual claims in excess of \$5,000; Non-seat belt users spent 54% more days in the hospital; Savings due to reduced medical claims and absenteeism was \$1.8 million

Tenneco (1987)	Compare turnover before and after opening of Tenneco Fitness Center in 1982	1,788 new hires from 1978-1981; 1,360 new hires from 1982-1985	All Tenneco employees	Two cohorts compared	7-Year Interval	Job turnover	Compare new hires cohort before and after 1982	No	Exercise had less turnover. Relationship between exercise and retention highest for female, nonexecutive (clerical) employees. Turnover pattern similar before and after 1982
Blue Cross/Blue Shield (1988)	Impact of health promotion on employee risk factors, absenteeism, and insurance utilization per site	Six (6) state BCBS programs ranging from 746 to 1,359 participants	Different employees in different sites: 1) Those free of heart disease, cancer, or stroke; 2) only employees in experimental units; 3) only employees with selected risk factors	No	From 1 Year to 5 Years	Health Risk Appraisal; Smoking; Weight; Absenteeism	Quasi-experimental with voluntary participation by worksites	No	Fewer claims and lower costs: Assumed increase in life expectancy and retirement benefits created negative cost benefits; Participants exhibited reduced blood pressure; Decreased serum cholesterol; Weight reduced; Increased smoking cessation; Lower average medical payments
Johnson & Johnson (1988)	Assess results of the smoking cessation program of the overall J&J. Live for Life health promotion program	Experimental: 1,899 continuously employed individuals; Control: 748 continuously employed individuals	All J&J employees at eligible worksites	Yes	2 Years	Smoking status (self-report); Thiopyrate (SO ₂) used with self-report but not used to validate	Prepost test design with 4 intervention sites and 3 sites receiving only annual health screen	Yes: Select random sample of 53% of non-volunteers for interviews; Compare participants to nonparticipants	More smokers quit in intervention sites (23%) than controls (17%); Not statistically significant; High risk CHD smokers quit at intervention sites (23%) vs. 13% at control sites
Tenneco (1988)	Determine relationship between exercise and injury prevalence	6,104 employees	In 1984: 3,230; In 1985: 2,874	No	2 Years	Injury prevalence	Correlate medical and injury claims for 1984 and 1985 (selected injuries) with 4 levels of exercise	No	Exercisers had lower annual medical costs; Exercisers did not experience any more injuries; For employees over 50, medical costs decreased as level of exercise increased
Cours Company (1989)	Evaluate health and cost-effectiveness of a cardiac rehabilitation program	180 post-coronary employees	Wage and salaried	No	6 Years	Wage savings; Cardiac rehabilitation savings; Exercise treadmill savings	Individual as own control pre and post MI, CAB, or angioplasty	All MI, CAB or angioplasty	Wage savings: \$1,078,588 Rehabilitation: \$ 226,198 Treadmill: \$ 65,905 Total: \$1,390,691 Savings over 6 years
General Mills (1989)	To compare health risk, medical costs, and absenteeism of employees before and after the "Trihealthion" health promotion program	1,200 invited Experimental: 685 Control: 341 Unassigned: 174	National sales division -- white collar	Yes	2 Years	Health risk appraisal; Medical costs; Absenteeism	Prepost with participants compared to nonparticipants	No: Authors note that "control group chose not to be in the Trihealthion"	After 1 Year: Medical costs up 20% for participants and 24% for nonparticipants (not significant); Participants smoking declined from 21% to 13% in 9 months; Participants exercising up from 48% to 80%; Participants had 19% reduction in absenteeism vs. 69% increase in nonparticipants. After 2 Years: Above trends continued. Trihealthion paychecks of \$3.10 in Year 1 and \$3.30 in Year 2 for each program dollar; Seat belt use increased from 44% to 81%; Percent of people with high diastolic blood pressure decreased 15% to 10%
Du Pont (1989)	Effect of a comprehensive health promotion program on absences among full-time employees in a large, multi-location company	Experimental: 4 sites with 29,315 employees Control: 19 sites with 14,573 employees	White collar and blue collar	Yes, 19 control sites	2 Years	Disability days	Prepost test control group design with no randomization	No	Blue collar employees at intervention sites had 14% decline in disability days vs. 5.8% decline for controls; Total of 11,726 fewer net disability days; Return of \$2.05 for every program dollar by end of the second year.
General Motors (1989)	Determine effect of programs to reduce CHD risk through weight and smoking classes; Four (4) levels of intervention intensity	Total of 7,804 employees in all four sites	Wage and salaried	Yes, 1 control site	3 Years	Smoking cessation enrollment; Weight reduction; Reduction in overall CHD risk	Quasi-experimental in 4 randomized worksites; Two (2) worksites with individual counseling	Worksites randomized but not individuals	In the 2 "counseling" sites employee participation was 46% in smoking cessation and 54% in weight reduction; Without counseling, engaged only approximately 10% of employees in weight and smoking reduction
Southwestern Bell Corporation (1989)	Determine effect of introducing a health care PPO triple option "Customercare" on overall medical utilization; Determine proportion of claims experience that is attributable to lifestyle habits and risks	Total of 87,000 workers and dependents; 70,000 triple option "Customercare" retirees; 43,000 + employees "in network"; 30,000 + employees "out of network"	Two groups tracked: 1) all active employees; dependents; and retirees; 2) a cohort of 44,000 active employees over five years	Yes	5 Years	Claims costs 1986 through 1990; Change in utilization patterns; PPO-HMO migration; Johnson & Johnson "Lifestyle Claims Analysis" (LCA) by multiple regression	Time series longitudinal analysis	Employees in target 65% in network, 35% with comparable demographics; out of network	Preliminary data to date confirms effectiveness of managed care program in savings; Lifestyle claims analysis (LCA) identified specific areas of lifestyle diseases to be addressed through the SBC comprehensive health promotion program ("Good Life"). Medical costs for Customercare employees rose 7% in 1989 and less than 10% in 1990 vs. corporate national average of 20.4% in 1989 and 21.6% in 1990
Johnson & Johnson (1989)	Effect of comprehensive health promotion program on work related attitudes of employees	Experimental: 1,019 Control: 586 Measured at baseline and at 1 and 2 years	All workers at 7 manufacturing sites within 50 mile radius in central New Jersey and northeastern Pennsylvania	Yes	2 Years	Six employee attitude scales; organizational commitment, job involvement, growth opportunity, supervision, working conditions, and job competence; 4 single item measures: respect from family, co-worker relations, pay/benefits, job security	Prepost test with 4 companies receiving "Live for Life" and 3 companies receiving annual health screens only	Yes: A 53% random sample of all non-volunteers selected for interview; Compare volunteers to nonvolunteers	Employee attitude changes at intervention sites greater and more favorable; Significant positive changes on: organizational commitment, supervision, working conditions, job competence/security, pay/benefits
Johnson & Johnson (1989)	Study of the absenteeism experience of 2 groups of employees	Experimental: 1,408 Control: 487	Wage and salaried	Yes	3 Years	Adjusted mean levels of absenteeism annually and over 3 years	Experimental group received comprehensive "Live for Life" program; Controls received no program	Yes	Adjusted mean levels of absenteeism declined and were lower (P < .01) in final year for wage earners; No significant difference for salaried personnel
Traveler's Insurance (1989)	Employee absenteeism after 1 and 2 years membership in a worksite fitness center	2,232 insurance company employees	White collar and clerical	No	2 Years	Mean number of absences due to illness at 1 & 2 years	Voluntary enrollment compared to nonmember employees controlling for known pre-existing differences between these two groups	No	Both men and women's absenteeism decreased by 1.2 days; Women's decreased more; Greater decrease in Year 2 than Year 1; Decrease related to level of participation