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The Benefits of Corporate Wellness Programs

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THE BENEFITS OF CORPORATE WELLNESS PROGRAMS

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An Abstract Presented to the Faculty of the Graduate
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ABSTRACT

Cost containment of health care cost is an extremely significant issue to employers today. Many employers have used strategies such as cost shifting and managed care to control costs with limited success. Many are using wellness programs with the idea of promoting healthy lifestyles to decrease the risks and demand for health care services. Other benefits which employers look for are an increase in employee productivity and morale, and decreasing absenteeism and turnover. The purpose of this thesis is to determine how effective wellness programs have been at achieving these goals.

Some form of wellness program has widely been used by employers. These programs emphasize regular exercise, proper nutrition, weight control, health care screenings, pre-natal care, stress reduction, safe behaviors, and avoidance of substances such as tobacco that are harmful to them. Some wellness programs are small in scale and may just give health screenings and educational materials on health issues. Others are larger in scale and may have their own fitness center and/or use outreach and follow-up counseling. The literature has produced many positive testimonials on the use of wellness programs among employers. Some employers have claimed a return of two, Three, or more dollars for every dollar invested in their wellness program.

There has been some very good research studies published that show that wellness programs do achieve their objectives when done properly. The literature shows that in order to maximize the success of a wellness program, it needs to recognize where the bulk of the health care claim dollars go, who are the most at risk for incurring these costly health care claims by giving employees personalized health risk appraisals, and to do outreach and follow-up counseling.

Since the literature consistently showed that wellness programs meet their objectives, the hypothesis is accepted.

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1999

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Chapter I

INTRODUCTION

Cost containment of health care benefits is one of the most significant issues for employers today. U.S. health care costs are the highest in the world and have been rising at a rate much higher than the overall inflation rate (Stout B4). Currently over fourteen percent of the gross national product is spent on health care, compared to five and four-tenths percent in 1960 (James 29). By contrast, Japan's is currently around seven percent (Stout B4). In 1992, American health care expenses totaled $840 billion and by the year 2000, it is forecasted to be $1.5 trillion. According to benefits consultant A. Foster Higgins, the average medical cost per employee will have risen from $4000 in 1992 to $12000 by the end of the century. The startling fact of the matter is this: With medical costs now consuming as much as fifty percent of corporate profits, by the end of the next decade, medical benefits will consume all corporate profits (Ahrens 1).

The U.S. Surgeon General's office reports that fewer than ten percent of all Americans over the age of eighteen engage in the regular, vigorous exercise recommended by the Public Health Service (1). According to a Rand Corporation study, this sedimentary lifestyle cost an average employer about $19000 in higher payments for health insurance, disability and sick leave. Each employee who smokes cost a company $351 annually (6). The Journal of Occupational Medicine

has reported that employees who smoke stay longer in the hospital-seventy seven percent more days and sixty six percent higher admissions-than those who do not. Smokers also make higher outpatient payments and have fifty percent higher insurance costs (6).

For the most part, employers and the government pay for health care (Caudron "Health Care Reform..." 59). From the perspective of employers, these rising costs take away resources that could be used more productively elsewhere (59). As far as the Federal Government is concerned, health care costs need to be contained in order to keep Medicare solvent (59). Both employers and insurance companies have used different strategies to contain health care costs. The following are some strategies that have been used to achieve reduced costs for both employers and insurance companies:

1. Raise deductibles and copayments by employees. The logic behind these increases is that they may encourage more responsible use of the health care system by employees. Clearly, employees are now bearing more of the economic load (Cascio 387). For example, a 1989 survey found that only thirty four percent of companies pay all hospital room-and-board charges incurred by employees or their dependents. In 1979, sixty nine percent did (Kramon C2).

2. Induce employees to voluntarily choose reduced medical coverage through benefits plans. Some employees would accept lower health care benefits if they had more flexibility in choosing the benefits that they want (Cascio 400). Instead of providing employees a set package of benefits, the employer says, "Based on

your $27000 annual salary, I promise you $5500 to spend any way you want." If health care costs soar, the employee, not the employer, decides whether to pay more or take less coverage (400).

3. Remove incentives in plans that favor hospitalization over less costly outpatient care. For example, Sperry Corporation pays one hundred percent for home health care, but less if an employee checks into a hospital (387).

4. Require a second surgical opinion prior to elective surgery. At Chrysler and J.C Penny, for example, if the employee fails to get a second opinion, the company will not pay the entire bill (387).

5. Use a "managed care" strategy. Managed care components include utilization reviews, Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs), capitation reimbursement, and claims auditing. One of the main objectives of managed care is to make medical decisions, especially when it pertains to surgery, more scientific. Another objective is to arrange for the providers to share the financial risks of providing medical care (Garcia A6).

Managed care and other strategies that have been used to control health care costs are important and have been somewhat effective. However, many employers believe that preventing their employees from getting ill or injured in the first place is also necessary. As a matter of fact, eight of the ten leading causes of death are largely preventable (Bernstein 882). For example, lung cancer can be prevented to a large extent if people would not smoke (882). According to the Wellness Council of America, by encouraging the healthy and safe lifestyles

of their employees, employers can significantly reduce health care costs as well as increase employee morale and productivity and decrease absenteeism and turnover. These are the ideas behind corporate wellness programs. These programs emphasize regular exercise, proper nutrition, weight control, health care screenings, pre-natal care, stress reduction, safe behaviors, and avoidance of substances such as tobacco that are harmful to them. Some wellness programs are small in scale and may just give health screenings and educational materials on health issues. Others are larger in scale and may for instance, have their own fitness center. Many of them start out small and expand as time goes on (Stasica 12). For example, Union Pacific began with a modest medical self-care initiative which consisted of written educational information. They later developed a comprehensive wellness program which also includes health screenings and specific strategies for high cholesterol, high blood pressure, weight control and smoking cessation (12).

Regardless of the kind of wellness program an organization may have, the main goal is to improve the health of the employees. Since insurance companies charge their corporate clients based on their perceived risks of health care claims, healthier employees would give the perception of lower risks in the short run and may equate to lower risks in the long run. This equates to lower insurance costs for all parties. Employees would feel better, be more content at work and be more productive. According to the Wellness Council of America (WELCOA), these results are what organizations anticipate when they implement a wellness

program. The Wellness Council of America is a national nonprofit organization dedicated to promoting healthier lifestyles for all Americans, especially through health promotion activities in the workplace (Ahrens 6).

The "founding father" of wellness programs is William M. Kizer, Chief Executive Officer and Chairman of Central States Health and Life Co. of Omaha. Kizer's interest in wellness began more than twenty nine years ago, when he became concerned about the claims and the loss ratio of his family-controlled insurance company (Schott 99). He sat down with the claims auditors and asked, "Why did some of these people die prematurely?" And "Why are some of these people in the hospital?" The answer was that most of them were there because of lifestyle choices. The illnesses and premature deaths were self-induced. He therefore developed for his company what is believed to be the first wellness program in the United States. Kizer felt that most of his employees had busy schedules outside of work and only had time for exercising at work. He therefore created a climate that supported healthful activities (100).

The idea of wellness programs spread slowly after Central States started their program. However, the need for wellness programs became strongly established when William Kizer brought CEOs of 53 companies together in 1982 to address worksite health issues and form the first Wellness Council in the country. That led to a nationwide effort underwritten by the Health Insurance Association of America in 1985 to establish a nationwide network of Wellness Councils. By 1987, the Wellness Council of America, of which Kizer is

founding chairman, was formed to oversee continuing development of community-based Wellness Councils. The Omaha Wellness Council now has more than 100 corporate members, and the 30 Councils now established or forming in 22 states and the District of Columbia have some 2,100 corporate members representing nearly 1.7 million employees. Today, more than 80% of America's businesses with 50 or more employees have some form of health promotion program (101).

Wellness programs have matured. The nonquantifiable "feel-good" approach of a decade ago has given way to health promotion programs that are closely linked to benefits strategy and business goals (Haltom 47).

Employers are using wellness programs as a tool to educate employees to make informed decisions about health care. They are also using it to challenge employees' entitlement attitude-that their employers are responsible for caring for their health and paying all of their medical care costs. Leading-edge wellness programs now involve rewards-and sometimes penalties-for lifestyle choices (48). In order for companies to develop an effective wellness program, they need to ask and answer the following questions:

1. In what area does the bulk of our health care claim dollars go toward?
2. What individuals or group of individuals are the most at-risk for incurring these costly health care claims?
3. What can we do as an organization to help minimize these risks?

4. Can we also do this in a way that would increase the employees' morale and productivity? (50)

A frequently cited statistic is that approximately 70 percent of health care claims can be attributed to only 10 percent of a company's employees (Overman 42). Cancer and cardio-vascular illnesses together account for 56 percent of hospital claims, according to a study by the National Center for Health Statistics (42). The largest single component of health care costs is expenses related to complicated childbirths. Mental health care is another high-ticket item. Stress is now costing American business about $300 billion a year. In 1989 the United States spent an estimated $17 billion due to time lost from work (42).

Companies must determine who is the most at risk for these very costly health care claims. Those who have high blood pressure, high blood cholesterol levels, are overweight, and who smoke are the ones that are most at risk for cancer and cardio-vascular illnesses. Pregnant women who do not get adequate prenatal care are the ones that are most at risk for complicated childbirths. Those who have high stress jobs and those who suffer from undiagnosed depression are the ones that are most at risk for mental health illnesses (42).

Unfortunately, we "don't do" prevention in the U.S. medical system. Hospitals and doctors are reimbursed for procedures and tests, not for educating and facilitating healthy lifestyle changes. It seems evident therefore that if health promotion and education about healthy lifestyles is to occur, a logical place would be at the worksite (Bunch 14). Employers can help minimize these risks by

screening their employees for risk factors, educating them on the ramifications of these factors, and helping them modify their lifestyles. This is particularly important for the high-risk employees. This is ultimately the main objective of a wellness program (17). The employer needs to make the employees aware of the existence of health risks, both in general and specifically for themselves and their families. They also need to educate their employees in ways that make the issues interesting and understandable (17). Employees must clearly perceive the personal benefits they will receive for striving for good health. They may even receive some financial incentive such as a reduced deductible on their health insurance. They need to be given the training and opportunities to make healthy lifestyle changes. There also needs to be social support and follow up (18).

The wellness program at Coors, for example, follows a social marketing model that provides six steps for behavioral change:

* Awareness
* Education
* Incentives
* Programs
* Self-action
* Follow up and support (Caudron "The Wellness Payoff" 56).

Most wellness programs do put a special emphasis on the high-risk employees because these are the individuals who probably will incur the most health care cost. To address those with a high risk of developing cardiovascular disease, there may be health screenings, written educational materials/classes, exercise and stress reduction classes, a fitness facility, nutritional guidelines, and

proper nutritional choices in their own company food service. Smoking cessation classes, a prohibitive smoking policy, and free mamograms may be offered to decrease the risk of lung and breast cancer and other diseases particularly related to smoking (Haltom 48). There must be an assurance that pregnant employees and pregnant wives of male employees get good pre-natal care through education and accessability. To address potential mental health problems, stress reduction classes can be given and treatment for depression and other mental health problems can be covered by the medical insurance plans. Emphasizing safe behaviors, particularly in a manufacturing plant environment can reduce on the job and even off the job accidents (51). Safety rules and regulations that are used for minimizing unsafe working conditions and unsafe working behaviors have been used in plants long before wellness programs existed. However, wellness programs should, and in many cases do, reinforce these rules and regulations. They also stress safe behaviors outside of work, such as wearing your seat belts when you are in your vehicle (51).

The previously mentioned first known wellness program of William Kizert's Central States Health and Life Company is worth looking at in more detail. Their wellness program is based on what they call a SANE approach (Smoking, Alcohol, Nutrician, and Exercise) (Schott 99).

The company wanted to create a smoke-free environment. They first allowed smoking only in designated areas. Then after several years of offering smoking cessation classes, a total smoking ban was implemented (99).

The second part of SANE involves the use of alcohol. The idea at Central States was that alcohol drains a companies resources-both human and financial. At Central States, alcohol is rarely served at business luncheons. At company dinners, soft drinks and fruit juices are displayed prominently. Also, the company contracts with a number of outside providers who help employees and their family with alcohol and drug problems and maintain strict confidentiality. In 1990, Central States began pre-employment drug and alcohol testing to head off potential problems. The Making the Grade (Gaining Responsibility for Alcohol and Drug Education) awareness campaign was launched company wide in 1991, using all-employee meetings, posters, and self-help manuals (100).

The nutrition segment of the SANE approach addresses food at the worksite. Employees have a choice of a healthy entree each day when they have lunch in the company cafeteria. Vending machines are stocked with sugar-free gum, nuts popcorn, and fruit.

The exercise part of the program started with some of the employees meeting after work to exercise to a Jane Fonda workout video. Today, they have a 5000 square-foot fitness center. Jazzercise, employee-taught tae kwon do and yoga classes meet regularly there (100).

William Kizer believes that small businesses have the most to gain using wellness programs. "For small business owners, who often measure profits in thousands of dollars, not millions, the net effect of an employee or two who stop smoking could mean the difference between profit and loss" (104).

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Another wellness program worth mentioning is the low-cost program of the City of Glendale Arizona. During the last ten years, they have had only three rate hikes from their health insurer carrier, the highest increase being a five percent adjustment two years ago. Moreover, the city received one rate reduction, as well as three refunds totaling more than a million dollars-something virtually unheard of in today's health care climate (Caudron 34).

The City of Glendale attributes these accomplishments to a wellness program that combines well-planned incentives with targeted health promotion activities. Established in 1982, the wellness program is also credited with reducing absenteeism and cutting the actual number of on-the-job accidents in half during a time in which the size of the city's work force tripled. One would think that such extraordinary success would require an extraordinary budget. But in 1991, the City of Glendale spent just $148,000 on health promotion activities for its 1400 employees and 800 insured spouses, demonstrating that it is possible to develop a successful wellness program without spending a fortune (34).

Glendale's program was unusual in that it was developed under the direction of Allen Iampaglia, a risk manager who had no previous experience in wellness or human resources. Before he was given responsibility for containing the cost of the employee benefits, there were health insurance plan increases of forty to fifty percent annually. Since he was so successful in using preventive maintenance on the $200 million of city equipment, he planned to use the same principles on the City's employees (34).

When Iampaglia began to research wellness as a way to avoid expensive health costs, he was confronted with resistance from consultants who encouraged him to try higher deductibles, higher co-payments and other cost-shifting techniques as a way to reduce the City's health care tab. But he believes that health care costs should be contained instead of just shifting more of the cost to the employees (36). Furthermore, he believes cost-shifting increases the financial burden on employees to the point at which they can not afford health care at all. According to Caudron, Iampaglia was quoted as asking,

> What have you really accomplished if an employee refuses to seek prenatal care because it's too expensive and winds up with a $50,000 hospital bill for a premature birth. Besides, I don't want to know what to do with an individual who has had a heart attack. I want to know who that is probably going to be. That is what risk avoidance is all about. (36)

Glendale's wellness program includes: a contract with Health Advancement Services for health screenings, education, lab work, literature and a full-time nurse, a contract for the fitness center at Glendale Community College, the monthly Vitality magazine for each employee, and on-site mammography.

In 1991, Hershey Foods Corporation, the famous chocolate maker, began looking at specific risk factors to see how they affected the employee population. The five risk factors specifically targeted at Hershey are: tobacco use, blood pressure, weight, exercise habits and cholesterol level. The wellness program works like this: Employees that fall within an acceptable range in each risk factor will be awarded with wellness credits toward their flexible benefits or receive

cash in their pay. For example, an employee in the healthy range for tobacco use may earn up to $24 per year in wellness credits. However, for each area that employees remain at risk, they will share the actual cost of that risk factor, not to exceed $70 per month. One important note: credits and charges occur when the risk factor is directly related to a modifiable behavior; no charges occur if risk factors are present because of genetics (Mason 31).

For each risk factor, the company offers programming to help modify employees' behavior. For instance, Hershey has a weight management program called Life Steps, which also provides information about cholesterol. For high blood pressure, there are screenings, seminars and visits to the medical department (31).

Smoking cessation classes are offered along with support groups. The company has two fitness centers that offer a host of activities such as swimming, racquetball, weights, treadmills and other fitness machines, volleyball, and walking or running courses. In addition, there are five-minute classes called Take Five, conducted by a staff nurse which offer tips on stress reduction. According to Mason, Dr. David S. Pratt, director of corporate medical affairs, states that,

> Rewarding healthy behavior is a concept employees agree with. They also support the charges because they don't want to pay for the unhealthy behaviors of others. Both the credits and charges seem to be very motivational for changing behavior. We see this as a win-win effort. We are happy to give the credits, but more importantly, we like that this will give people happier, longer lives, and more energy and enthusiasm for their lives, family and work. (31)

The John Alden Financial Corporation has a wellness program named "Health Works," which is designed to promote a "back to basics" approach to health care and encourage employees to take personal responsibility for their health. Examples of the firm's wellness activities includes organizing health fairs, aerobic classes, a smoking-cessation workshop, presentations on stress management, an intramural sports team competition, a Weight Watchers at Work program, on-site mammogram testing, and cholesterol and colonrectal cancer screenings (Epes 28). Haggar Apparel Company decided to introduce a broad program of coverage for prenatal care when it discovered that ninety five percent of its female work force was not seeking prenatal care because of the expense. Haggar's program allows expectant mothers to receive full reimbursement if they see their physicians within the first trimester of their pregnancies. (Marshall 45).

The Florida Power and Light Company has a comprehensive employee wellness program. The wellness program includes fifteen individual programs such as, nutrition and weight loss, healthy back, stretching, ergonomic analysis, stress management and drug and alcohol education. The information is available on videos, lectures, reading materials and phone hotlines. Health risk appraisals and heart and cancer screenings are also available through several hospitals. There are also special needs programs such as prenatal and postpartum classes (Nesse 106).

Dominion Resources Inc., a utility holding company, has their workers share both in the health care insurance risks and in the rewards. They have a

wellness program that reimburses employees who are low-risk based on five health care factors. Theses are blood pressure, cholesterol, weight, smoking and seat-belt use. Employees reported as being low-risk get $20 in flex credits ($50 for families). The employees also share in the savings when health care costs are below budget. The healthier the employee was the more he or she got. In 1992, some employees got checks for $800 (Laabs 44).

In preparation for the physical work of their jobs, production employees at the Subaru-Isuzu Automotive plant in Lafayette, Indiana do aerobic and stretching exercises. It was designed to reduce the number of work-related injuries (Cunsch 59).

There have been some studies published which show a statistical correlation between wellness programs and reducing the risk of illness. An example of this kind of study has been published in the American Journal of Public Health by Tim Byers, M.D. The purpose of this study was assess the impact of a nutrician education program following a cholesterol screening. Health screenings and nutrician education are usually basic parts of wellness programs (650).

For this study, forty work-sites were randomly assigned to an educational intervention consisting of two hours of behaviorally based education on dietary changes to lower serum cholesterol. Cholesterol levels were tested twelve months later. After twelve months, these employees who participated in the educational intervention showed a 6.5% drop in cholesterol levels.

The study's conclusion was that a behaviorally based nutrition education program following cholesterol screening can be a useful way to lower the risk of heart disease.

Another study done on a wellness program was at the Oakland General Hospital in Madison Heights, Michigan. They offered employees health screenings, educational videos, healthy food in the cafeteria and an exercise facility. A year later, it was discovered that 67% of the employees that participated improved their health status. The indicators most often met include: elimination of back injury, nonsmoking behaviors, reduction in blood pressure, cholesterol and percent body fat, and consistent use of seat belts (Byers).

Cost containment of health care costs is an extremely significant issue to employers today. Many employers have used strategies such as cost shifting and managed care to control costs with limited success. Many are using wellness programs with the idea of promoting healthy lifestyles to decrease the risks and demand for health care services. Other benefits which employers look for are an increase in employee productivity and morale, and decreasing absenteeism and turnover. Certainly, wellness programs deserve to be considered by any employer.

The purpose of this study is to show why employers use wellness programs and how effective they are in controlling health care costs, increasing employee productivity and morale, and decreasing absenteeism and turnover.

Chapter II

LITERATUR REVIEW

The main goal that employers hope to accomplish through the use of wellness programs is to significantly reduce health care costs (Miller 20). Wellness programs encourage the healthy and safe lifestyles of their employees. By doing this, employers also can achieve other important goals such as increasing employee morale and productivity and decreasing absenteeism and turnover. The purpose here is to determine how effective wellness programs have been at achieving these goals.

At one time, companies used wellness programs as a recruitment tool believing that it increased morale and productivity (20). According to Miller, Don Hillier, a wellness consultant in Baltimore, states that,

> I am convinced that potential for healthcare management far exceeds anything else you can do to contain health care costs. I have spent alot of time researching the cost and benefits of wellness programs. Conservatively speaking, each of them has a return on investment of between three and five dollars for each dollar invested. (20)

Other consultants echo the cost benefits of employee health promotion programs. The Center for Corporate Health in Oakton, Va., reports it has tracked returns of almost $5 for every dollar invested in programs that include self-care manuals and nurse telephone counseling services for employees (20).

In 1990, the Sony Corporation of America did an exclusive study of

medical care claims filed during a three-year period, 1988, 1989 and 1990. They examined the type of claims submitted, patterns of claims utilization and costs of claims. This information was then compared to similar employer data and was adjusted for Sony's particular medical plan design, employee demographics and geographic locations (Santora 40).

What they found was that one-third of the claims resulted from what they believe to be modifiable conditions. Further, the study showed that about half of the group-seventeen percent of all employees-were responsible for fifty percent of all of the medical claims (41).

Armed with this information, Sony wanted to raise the employee awareness of potential health risks, as well as give them the opportunity to receive a customized health risk appraisal. The company estimates that the cost of the preventive care and wellness program initiatives will run into "hundreds of thousands of dollars" initially, and will take several years before that expense is offset in lower claims' costs (44).

However, according to Ronald W. Komers, Personnel Director of Ventura County Government, his organization has crunched the numbers to prove that its wellness program, initiated in 1985, has reduced the public entity's overall health plan costs (Wojcik 7).

Results have been significant: Participants generate an average of $212 less per year in health claims than non-participants, and the average participant's risk factors fell to 3.5 from 4.7 before joining. In tallying self-reported changes by employees, Mr. Komers has found that: eighty percent increased aerobic exercise,

sixty-one percent lost weight, eighty-two percent increased seat belt usage, fifty-one percent reduced or quit smoking, sixty-nine percent reduced blood pressure, and eighty-six percent reduced fat intake (7).

The Florida Power and Light Company (FPL), which was mentioned earlier, has reported positive results from their wellness program. They state that for every dollar spent on its wellness program, the company and its employees saved three dollars. Costs for health care claims decreased initially by eight percent; costs decreased an additional 4.2 percent because of market conditions. The total in savings: $2.9 million for FPL and $1.5 million for its employees (Nesse 107). Surveys given to employees that participated in the wellness program determined that forty-seven percent of employees reported better eating habits, thirty-five percent had lost weight, thirty-four percent were exercising three times a week and thirty-three percent said they had improved stress management skills (107). Using results from the National Heart Attack Risk Study, FPL calculated that employees had improved in five major risk areas from 1991 to 1993: cholesterol, blood pressure, blood sugar, weight and reduced smoking (107).

These two articles concerning the Ventura County Government and Florida Power and Light Company wellness programs did not give details on how their cost/benefit analysis was done. However, the reported results were very impressive. It may encourage other employees without a wellness program to consider one.

The John Alden Financial Corporation, which was mentioned earlier, has developed measurements that point to the success of their HealthWorks program. For example, participants of the Weight Watchers at Work part of the program have lost more than 4,500 pounds during a seven-year period (Epes 32).

Specifically, John Alden's approach to breast cancer (which will strike one out of nine women in the U.S. during her lifetime) illustrates how corporate concern for employee health can contain health care costs. At least two John Alden employees are alive today because of the company" free mammography program, which helped them detect their breast cancers at an early stage (33).

Moreover, consider that in South Florida, the average cost of a mammogram performed by a private physician is $120, while a mammogram performed in the HealthWorks-sponsored mobile van cost only $65. The average time an employee misses from work to go to a private physician is two hours, while the HealthWorks screening takes just thirty minutes. Therefore, the direct savings from 115 mobile mammograms totals $6325 and 172.5 hours of employee time (33).

Also, because the average cost of breast cancer treatment nationally is $18000 per person with early detection, and $80000 per person with late detection, early detection of the two employees' breast cancers probably saved the company $124,000. This is almost a 17 to 1 return on the company's wellness investment of $7475, which is the cost of providing 115 screenings at $65 each (33).

Expenses related to childbirth have become the largest single component of total health care costs for employers, according to a 1992 study conducted by Philadelphia-based CIGNA Corporation. The study, titled "The Corporate Cost of Poor Birth Outcomes," indicated that these childbirth-related expenses account for between ten percent and forty-nine percent of employers' total health care costs. Adding the expenses of absenteeism, disability, turnover and cost shifting compounds the problem further (Marshall 43).

Some employers have therefore developed prenatal work-site programs that should be considered an important component of wellness programs. These programs educate employees on proper prenatal care, assess their risks and make it affordable to them (43). For example, Haggar Apparel Company's work-site prenatal program has realized significant cost savings. Health care claims related to chidbirth dropped from $2.3 million in 1991 to $1.8 million in 1992, a savings of more than a half-million dollars. This saving was realized even though the total number of births increased (45).

Research concerning the wellness program at John Alden and CITGNA Corporation is significant because it showed significant cost savings from having mammograms and prenatal care available to and affordable for employees. They also stress the idea of prevention, which can save not only money but also lives.

An important component of corporate wellness programs, as well as to good health in general, is physical exercise. There are numerous good reasons why individuals exercise and promote exercise including weight loss, stress relief, improved physical appearance, increased self-esteem, improved muscular

flexibility to decrease the chance of injury and increased energy level and strengthened cardio-vascular system. The lack of exercise can create physical problems that may affect an employee's work performance.

Low-back pain, cumulative trauma disorders, and stress are occupational medical conditions that affect the worksite environment (Moore 593). These conditions may negatively affect an employer by influencing workers' compensation, productivity, healthcare costs, absenteeism, and turnover. Additionally, employee attitudes and morale may suffer (Shephard 354).

Westinghouse Electronic Assembly Plant in College Station, Texas, a producer of computer boards, was concerned about these occupational medical conditions. After reading several reports that presented evidence that implementation of certain targeted exercise programs may decrease and/or prevent the incidence of specific occupational medical conditions, Westinghouse decided to sponsor a research study of their own (Pronk 175). The assembly of computer boards requires soldering skills performed under a microscope. This task involves repetitive motions and, since the task is performed while seated, it is also rather sedentary. Hence, a strength and flexibility exercise program was developed to prevent increases in cumulative trauma disorders and low-back problems. The purpose of this report was to present results of an initial six-week pilot study as well as six-month evaluation of the plant-wide implementation of this program (main study). This report describes the changes in strength, flexibility, mood states, and occupational stress in employees enrolled in the pilot and the main study, respectively (175).

In the pilot study, subjects were recruited from the plant population following a presentation of the purpose of the project to managers of assembly teams. Two managers of the representative assembly teams voluntarily agreed to let their teams participate in the pilot study. Groups were randomly assigned to either a control (n=8) or an experimental (n=11) condition. Both groups were involved in identical work tasks representative of the product manufactured at the plant and participated in both baseline and six-week assessments (175).

Subjects for the main study involved the entire plant population (one hundred percent of paid employees) across all levels of the work force (n=210). This subject pool included those who had previously participated in the pilot study. Although not forced or coerced to participate, all employees were strongly encouraged to be cooperative and supportive and participate actively in the program. Employees were allowed ten minutes of company time for participation. This approach was well received as reflected in a daily employee participation rate of ninety seven percent to one hundred percent (175).

The intervention strength and flexibility program was applied to the experimental group in the pilot study. The control group only participated in the pretest and posttest assessments. The intervention exercise module in the main study was similar to the one used in the pilot study. Examples of some of the flexibility and strength exercises are: lower back/trunk stretch, finger flexor stretch, head abductor stretch, shoulder rolls-forward/backward, palm muscles/wrist flexor stretch, etc.. Assessments were performed at baseline and at six weeks in the pilot study and at baseline and six months in the main study.

An abbreviated version of the Profile of Mood States (POMS) was used to assess employees' mood states. A single measure of job stress was obtained by use of the fifteen-item Occupational Stress Scale (OSS) (176).

The results of the pilot study showed only one significant change in the control group, a fifty nine percent improvement in self-esteem. In contrast, the experimental group improved significantly in right and left grip strength, right wrist flexion, and left wrist extension. Furthermore, significant improvements were noted in the fatigue (-34.2%), tension (-35.4%), and self-esteem (+26.9%) affects. Despite nonsignificant improvement in the remaining four affects, a significant 9.5% improvement in total mood disturbance was also observed. The OSS job stress scores did not change across the six weeks for either group (176).

The results of the main study indicated significant improvements in all flexibility measures. All mood subscales were noted to change in the desired direction across the six months of program implementation. Significant effects were found for fatigue (-12.3%), anger (-16.2%), and depression (-17.9%). Hence, total mood disturbance was noted to decrease significantly by 4.7%. A nonsignificant decrease of 3.3% was observed for the OSS score (177).

The results of this study indicate that it may be possible to successfully integrate exercise into the daily work routine of employees with a favorable impact on preventive measures for cumulative trauma disorder and mood states while improving components of health-related physical fitness of the employee (176).

Many human resource managers have campaigned for and implemented corporate-sponsored exercise programs. However, upper management, who are bottom –line driven, generally will not be convinced to spend money on exercise programs on positive testimonials alone. They will want some hard data hopefully showing financial savings to justify these programs.

Like numerous corporations across the United States, two Southern California companies, Industrial Products Producer and Financial Institution Processing Center, recently implemented work-site exercise programs. Human resource executives at both companies were looking for information that would justify their request for money to improve the exercise facilities. Therefore, these two companies agreed to serve as research sites for a Society of Human Resource Managers (SHRM) funded study on exercise in the workplace. Researchers worked with Human Resource executives to gather data and evaluate potentially positive effects of exercise and participation in a corporate fitness program (Pavett 81).

Industrial Products Producer employs 1,500 people. It has a broad Health Promotion Program (HRP) that had been active two years before the study begun. The HPP included health screening, personal improvement plans, Weight Watchers and a recreation center. The workout room in the recreation center is small but well used. The high level of use is attributed to a very enthusiastic fitness coordinator who is on site three days a week. Employees are encouraged to develop a personal improvement plan that focuses on exercise. Token gifts like

coffee mugs and T-shirts are used as rewards for achieving personal fitness goals (81).

Financial Institution Processing Center employs 1,100 people. The major element of this company's exercise program is a new 2,000 square-foot exercise facility. This workout area has several Universal gyms, stationary bicycles and free weights. Aerobic classes, running and walking programs are offered. A professional exercise and fitness company runs the facility, conducts general health and fitness screenings, designs exercise programs, passively supervises weight training and conducts the classes (81).

A small employee sample from each company was randomly selected for a 40-minute personal interview. The 46 interviewees were asked about their experiences with exercise and the corporate-sponsored programs. The results of these personal interviews were used, in part, to design a questionnaire survey. Four categories of survey questions assessed demographic information, personal characteristics, work behaviors and attitudes. The questionnaires were distributed to a random sample that represented forty percent of the population in each company (83).

The results of the personal interviews indicate that sixty-five percent of the interviewees exercise. Of those who exercise, fifty-seven percent report using the corporate facilities. When those who exercise are asked about their experience, stress reduction and improved self-concept are reported by eighty-seven percent and increased energy and improved job performance are reported

by sixty percent. These results clearly show that people think they feel and perform better as a result of exercise (83).

Responses to the questionnaire surveys were analyzed to answer two different sets of questions. First, do employees who exercise on a regular basis report different levels of stress, self-concept, motivation and job performance than people who do not exercise? Also, do exercisers report more satisfaction and less absenteeism than nonexercisers? The second set of questions is similar to the first set, but targets the differences between people who participate in the work-site exercise program and those who do not. Specifically, do program participants have lower levels of stress, higher levels of self-concept, motivation and job performance than do nonparticipants? Are the nonpartticipants less satisfied and absent more often? Employees were divided into three categories: nonexercisers, moderate exercisers and heavy exercisers (83).

Statistical analyses showed that both moderate and heavy exercisers reported virtually the same levels of stress, self motivation, job performance and job satisfaction as did the nonexercisers. However, exercisers reported a significantly higher rate of dissipated work-related tensions and therefore were able to get rid of the stress faster than nonexercisers (83).

One important difference did emerge. Illness-caused absenteeism and tardiness were less for heavy exercisers than for nonexercisers or moderate exercisers. Heavy exercisers reported an average of 1.12 workdays missed due to illness, versus 1.24 for moderate exercisers and 1.30 for nonexercisers. Therefore, heavy exercisers miss .12 days less per month (1.44 days less per year) due to

illness than moderate exercisers. The potential value of an exercise program to a company with 1000 employees who make an average of $2000 per month could be $10,909 per month. If the participants are professional and managerial with total compensation of $6000 per month, this savings increases to $32,727 per month. Obviously, not all employees will be heavy exercisers and some employees will exercise regardless of the presence of a fitness program. However, exercise programs clearly have the potential to reap monetary benefits due to decreased absenteeism (84).

Participation in exercise programs can have many beneficial health outcomes for individual participants, such as lowered risk of cardiovascular disease , increased alertness, improved muscle tone, mitigation of the negative effects of stress, and elevated mood states (Falkenberg 511). The programs can also have a number of beneficial outcomes to organizations that sponsor them, such as providing a competitive advantage in recruiting skilled employees , generating a shared "worker-oriented" perception of the firm, improving employee attitudes, lowering turnover, and reducing discretionary absenteeism (Baun 18). However, the primary reason that organizations implement such programs is the strong connection between these organizational and individual outcomes. To achieve these outcomes, it is necessary to motivate individual employees to change health-related behaviors by participating in a health promotion program (Erfurt 5).

A research study was completed which concerned health-related differences in motivational building blocks when promoting regular exercise in

organizational fitness programs (Harrison 47). Five different hypotheses were proposed and tested in a longitudinal field study involving questionnaire, physiological, and behavioral data from 107 participants in such a program. The five hypotheses in this study are (49):

Hypotheses 1: Exercise goal commitment is a direct, positive antecedent of the attainment of exercise goals (in an organizational fitness program).

Hypothesis 2a: Commitment to an exercise goal (in an organizational fitness program) is a positive function of the attractiveness of goal attainment, which itself is a sum of products of instrumentalities and valences associated with perceived consequences of goal attainment.

Hypotheses 2b: Commitment to an exercise goal (in an organizational fitness program) is a positive function of the perceived control/task-specific self-efficacy regarding goal attainment, which itself is the converse of a sum of perceived barriers to goal attainment.

Hypotheses 3a: Past health-related factors, such as smoking, somatic problems, frequent sick leave, high cholesterol levels, high resting heart rates, high blood pressure rates, and/or a great percentage of body fat are positively related to perceived health-related barriers to attaining fitness goals.

Hypotheses 3b: Individual differences in health-related factors will be positively related to other (not health-related types of perceived barriers to attaining fitness goals (49).

A variety of motivational factors might affect an individual's attainment of exercise goals in an employee fitness program. The immediate determinant of goal attainment is goal commitment. Two sets of proposed motivational components or "building blocks" of such goal commitment were examined. These building blocks are (a) the factors that make up the attractiveness of goal attainment, and (b) perceived barriers that make up the perceived power to produce goal attainment. The health-related individual differences in these motivational components were also examined. If such differences are shown, this

study might provide the rudiments for an approach to managing participation of high-risk versus low-risk employees (54).

The setting for this field study was a large, urban university in which 107 full time employees participated in a fully developed employee fitness program. The 107 employees came from a pool of 341 fitness program members who volunteered to participate During individual interviews these participants were asked to consider a specific goal: 30 or more minutes of vigorous exercise, an average of three or more times per week, for 8-12 weeks (depending on what point in the semester the participant was interviewed). Not only was the goal specific, it was difficult for most subjects. The mean level of individual participation before the interview was about 1.7 exercise sessions per week. During the interviews several individual differences were measured, as well as instrumentalities and valences of outcomes of attaining the assigned goal, and perceived barriers to successful goal attainment. As the hypotheses dictated, the individual differences were related to the motivational components, and the motivational components to subsequent exercise behavior in the fitness program (54).

To ensure that the motivational building blocks used in the study were grounded in the population at hand, an elicitation study was conducted. A one-page survey was sent to all fitness program members two months prior to the beginning of the main study. Elicitation questions were open-ended and asked participants to (a) list all positive, negative, or neutral outcomes of vigorously exercising thirty minutes or more, an average of three or more times per week in

the fitness program, for the upcoming semester; and (b) list other things the respondent associated with the goal, including factors that might keep them from reaching it. The first question elicited relevant outcomes; the second, perceived barriers (55).

The data-collection procedure consisted of on-site interviews that were given in two parts. The first part of each interview was oral, containing questions about how the participant evaluated the administration and features of the fitness program. In the second part of the interview, motivational constructs were measured using interactive questionnaire items presented by a laptop computer. Those items were followed by self-reports of health variables. Goal attainment was measured using archival records. Perceived barriers were measured by asking questions such as, "How likely is it that an injury will keep you from attaining the goal (58)?"

Twenty-nine percent of the participants attained the exercise goal. Supporting Hypothesis 1, the correlation of goal attainment with goal commitment was significant (61). In keeping with Hypothesis 2a and 2b, indices of goal attractiveness and task-specific self-efficacy/perceived control were shown to have significant correlation to goal commitment. Goal attractiveness and perceived control/task-specific self-efficacy were also fairly independent, suggesting that whether or not the goal seemed attractive had little bearing on one's judgements about barriers to achieving it. Hypothesis 3a and 3b were strongly supported by the health data. Employees who complained more about aches and pains, took more sick leave, were more obese, or smoked, all perceived

less control/efficacy than their healthier counterparts over health and work related barriers to achieving the exercise goal (63).

A principle contribution of this study is the demonstration that motivational principles applied in work performance context can also be applied in the context of organizational fitness programs. Another contribution of this study is the demonstration of predictable, health-related individual differences in the cognitions underlying goal commitment and goal attainment in an organizational fitness program. As a manager, such differences are perhaps the most important to address because they are the most directly related to the program's cost-effectiveness (65).

Smoking tobacco by employees is another health risk that wellness programs try to address. This health risk not only pertains to smokers but to nonsmokers. The growing evidence linking exposure to environmental tobacco smoke to disease in nonsmokers (EPA 6) and the increase in clean indoor air legislation at the state and local level has led to increased pressure to implement smoking regulations and smoking cessation programs at the workplace. Efforts to implement worksite smoking regulations have been fueled by the effects of smoking on productivity and subsequent costs to the business and by the potential for legal actions by workers who believe they are adversely affected by involuntary exposure to tobacco smoke (CDC89).

A recent survey conducted by the US Department of Health and Human Services indicates that the percentage of businesses with smoking policies has more than doubled during the past decade, from 27 percent in 1985 to 59percent

in 1992 (USDHHS 93). In addition, a public opinion poll conducted by the Gallup organization indicated that the percentage of Americans who favor smoking restrictions in the workplace has increased from 87 percent in 1987 to 91 percent in 1991 (Gallup 315).

As one of the nation's premier agencies for setting standards in health promotion and disease prevention, the Centers for Disease Control and Prevention (CDC) instituted a policy ending smoking at its facilities. In 1987, CDC restricted smoking to designated smoking areas, and in November 1990, it instituted a smoke-free policy that applies to all persons CDC and the Agency for Toxic Substances and Disease Registry (ATSDR) facilities (Emont 457).

A research study was done on smoking behavior and other tobacco use behaviors, the effect of the smoke-free policy on air-quality, and acceptance of and compliance with the smoke-free policy among CDC and ATSDR employees approximately six months after policy implementation. A stratified telephone survey of 1181 CDC/ATSDR employees randomly selected from employee rosters located throughout the United States and Puerto Rico. The survey sample represented 22 percent of all CDC/ATSDR employees. Demographic and smoking history variables, attitudes toward and impact of the smoke-free policy on smoking behavior, and self-report changes in air quality were the measures used (Emont 457).

The overall adjusted population prevalence of cigarette smoking was 11.1 percent. Prevalence varied little by gender, race or age group. However, educational status was significantly associated with smoking prevalence. The

smoking prevalence ranged from 20.1 percent among persons with a high school diploma or less to 5.5 percent among persons with graduate or professional degrees. Smoking prevalence also varied significantly by job classification. Prevalence was highest among service personnel (25.7 percent), followed by clerical (16.8 percent), technical (14.5 percent), administrative (11.5 percent), other (10.5 percent), and professional staff (7.6 percent) (458).

The CDC/ATSDR Smoke-Free Policy did have a positive effect on smoking behavior. Among current smokers, self-reported daily cigarette consumption declined after the implementation of the policy: about 21 percent of the smokers reported smoking more than 25 cigarettes per day before the policy was implemented compared with 15 percent after the policy was implemented. Similarly, the percentage of light smokers (<15 cigarettes per day) increased by 9 percentage points after the policy was implemented (40 percent prepolicy versus 49 percent postpolicy) (458).

More than half of the current smokers (52 percent) reported that their cigarette consumption during work hours had decreased as a result of the smoke-free policy, 47 percent reported no change in consumption, and less than 1 percent reported an increase during work hours. Only 8 percent of the smokers reported a decrease in off-work cigarette consumption, whereas 71 percent reported no change in consumption, and 21 percent reported an increase in off-work cigarette consumption. About 25 percent of all smokers indicated that the smoke-free policy had an effect on their interest in quitting smoking, and about 13 percent reporting quitting for at least 1 day after the smoke-free rule (458).

Opinions about the CDC/ATSDR smoke-free policy and exposure to environmental tobacco smoke were also published. Overall, about 90 percent of the employees supported the smoke-free policy. A significantly greater percentage of employees who formerly smoked (91.1 percent) and employees who never smoked (96.2 percent) supported the policy than did those who currently smoked (56.3 percent). It is interesting to note that support for the policy among current smokers was associated with amount smoked. Forty-five percent of heavy smokers (25+ cigarettes per day) supported the policy as did 51 percent of moderate smokers (16 to 24 cigarettes per day) and 63 percent of light smokers (<15 cigarettes per day). About 80 percent of those surveyed said they believed that smokers were complying with the smoke-free policy. A majority of the employees said that the air quality of work areas (64.6 percent) and nonwork areas (69.2 percent) had improved since the smoke-free policy was implemented, although former and never smokers were significantly more likely than current smokers to report this improvement (459).

The CDC/ATSDR Smoking Cessation Implementation Committee has drafted a proposal for a comprehensive CDC/ATSDR employee smoking cessation program that will allow interested smokers to choose one of three options for stopping smoking. These options include self-help techniques, formal smoking cessation programs, and pharmacological aids to quitting (i.e., nicotine gum or patch) (459).

Previous research reports have focused on smoking control strategies of larger employers. However, more than one half of nongovernment workers in the

United States are employed by firms with less than 100 workers and more than one quarter are employed by firms with less than 25 workers (Bureau of the Census 113). Smaller firms have characteristics that distinguish them from larger firms, including less elaborate organizational structures and smaller work spaces (Kimberly 571). These differences may influence the types of smoking control strategies introduced by these firms.

A research study was done to assess and compare cigarette smoking control strategies of firms with small work forces with those of larger firms. The study design was a cross-sectional telephone survey of managers in a sample of private firms with 10 or more employees in four counties of two northeastern states. To assess the relationship between work force size and smoking control strategies, firms were grouped into three categories based on reported number of employees at the responding location. These categories were small (25 or less employees), medium (26-50 employees), and larger firms (more than 50 employees); they were created using estimates of the work force sizes which might lead to substantial changes in differentiation of organizational structures (Flynn 203).

A clear pattern of differences in smoking control strategies between small and larger firms emerged from this data. Small firms seem to be lagging behind in several areas, which may be indicators of progress toward smoke-free workplaces. They were less likely to have written policies and used fewer methods to communicate their policies. Their policies tended to be less restrictive and they imposed less severe sanctions for policy violations. Small firms also were much

less likely to offer assistance to employees who wished to quit. However, they reported significantly better adherence to smoking policies (207).

The less restrictive smoking policies reported here may be relatively ineffective in protecting nonsmokers in small firms. Small firms may encounter problems in developing and implementing more restrictive policies because of relatively greater closeness of employer-employee relationships and the use of informal consensus-building processes to develop these policies. These factors may increase the need for managers in small firms to acquire the skills and confidence needed to develop more restrictive policies, which will be accepted and adhered to by employees. Implementation of stronger policies in small firms may increase employee demand for cessation assistance (209).

These observations may provide some preliminary guidance for health educators who are concerned with implementation of more effective smoking policies in small firms. A number of questions for future research also have been raised. If these complimentary efforts contribute to introduction of more restrictive smoking policies in small firms, without affecting the high levels of adherence reported, the public health benefit could be substantial because of the substantial proportion of the private work force employed in these firms (209).

Smoking is only one of the health risk that needs to be identified. A logical starting point for any wellness program is to appraise all of the employees' health risks. Every employee does not have the same health risks. Therefore, different strategies would be needed to address the particular health risks of that employee. Some employers have appraised their employees' health by using a

simple survey in which the employees answer questions about their health. More employers are starting to use a Computerized Health Risk Appraisal (HRA), which is a relatively rapid and efficient technique to screen for and to provide individualized health education about all major health risks. The HRA has been defined as "a procedure for using epidemiological and vital statistics data to provide individuals with projections of their personalized mortality and with recommendations for reducing that risk, for the purpose of promoting desirable changes in health behavior" (Schoenbach 576). Advantages of the HRA as a health education tool include ease of administration, popularity with users, and ability to convey an extensive amount of personalized health information quickly and concisely. In addition to its potential value as a health promotion tool, HRA has been cited as a useful technique to monitor and possibly control medical claims costs (Burton 268).

A research study was performed at a large financial services firm in New York City to evaluate the efficacy of HRA when it is incorporated into a periodic health examination of the worksite. The study used a randomized controlled design in which employees who volunteered for a periodic health evaluation program were randomly assigned to one of two groups:

- The HRA group, which received a written report from the Centers for Disease Control (CDC) HRA with counseling.
- The control group, which completed the HRA questionnaire but received no HRA report or counseling.

Blood pressure, cholesterol, and weight were measured by project staff, physical activity and seatbelt use were measured by self-report, and the HRA program calculated change in computerized appraised age. All participants were asked to return at six months to complete the follow-up HRA questionnaire and undergo repeated measurements of weight , blood pressure, and cholesterol (Gemson 463).

Evaluation of the ninety participants who returned for follow-up revealed a statistically significant improvement in computerized appraised age and physical activity in those who had received the HRA report and counseling compared with those who had not, and also showed trends toward greater improvement in blood pressure, weight, and seat belt use. This study seems to indicate that computerized HRAs are an effective component of periodic health examinations at the worksite. The study also appears to provide support for the assertion that HRAs are an efficacious tool for improvement in health behaviors (466).

Improving health behaviors among employees is very important in order to cut costs, increase employee morale and productivity and decrease absenteeism and turnover. Employers should also consider other health-related components in their wellness programs to address these issues. A good example of this is trying to keep maternal absenteeism to a minimum.

In American society the mother has traditionally borne the responsibility for the healthcare of her children. In 1990, 71 percent of the women employed in the civilian labor force had children and at least 50 percent of women who

become pregnant return to the labor force by the time their children are 3 months old (Klerman 284). Generally, day-care providers do not take responsibility for a child's health care. Therefore, it is usually the mother who has to handle any health problem of her child, often to the detriment of her attendance record at work (Presser 1202).

This parenting "fact of life" has fiscal implications for companies. Permitting employees to take time off for family responsibilities may result in lower productivity, but the consequence of not doing so can be expensive as well. An employee who is required to remain at the worksite while worried about a sick child may be less productive than those whose entire attention can be focused on the job. To the extent that an employee finds no available compromise in making choices on the basis of concern either for family or for employment, job satisfaction may be eroded. By displaying a lack of concern about the family needs of employees, the employer may sacrifice a measure of loyalty that might eventually result in increased employee turnover and the attendant upheavals and expenses (Cohen 149).

Because infant illness is a frequent cause of absenteeism among employed mothers, programs that aim to improve infant health may also bring about a reduction in maternal absenteeism. Continuation of breast-feeding among employed mothers after the time they return to work could have important consequences for infant health. National norms , however, indicate that only 10 percent of employed mothers continued feeding their infants breast milk for the recommended first six months of life. Having a lactation program, which

accommodates mothers who breast-feed their infants is something employers may consider (149).

A quasi-experimental study was done to make a comparison between breast-feeding and formula feeding among employed mothers until their infants were weaned or reached one year of age. Absenteeism directly related to childcare was also examined. Two corporations with established lactation programs were used. One had approximately 100 births annually among 2400 female employees, and the other had approximately 30 births annually among 1200 female employees. A sample of 101 participants, 59 feeding breast milk and 42 using commercial formula, was composed of employees returning from maternity leave from a medically uncomplicated birth. The programs provided counseling by a lactation professional for all participants and facilities to collect and store breast milk. Confidential participant diaries provided descriptive data on infant illnesses and related absenteeism that the lactation consultant verified with health care providers and through employer attendance records (152).

The results of the study showed that of the approximately 28 percent of the infants in the study that had no illnesses, 86 percent of these were breast-fed and 14 percent were formula-fed. When illness occurred, 25 percent of all 1-day maternal absences were among breast-fed babies and 74 percent were among the formula-fed group. In this study, fewer and less severe infant illnesses and less maternal absenteeism was found in the breast-feeding group (152).

This study shows an example of what an employer can do to decrease absenteeism and turnover and hence increase productivity in a simple and inexpensive matter.

The lactation program study showed how a part of a wellness program could be cost effective. However, a company that has the intention to start a wellness program should try to design one where the program as a whole is cost effective. Many different worksite wellness program designs are being implemented, but the positive effects produced by one design would not necessarily occur if a different design were substituted. Systematic evidence that compares effects and costs across different program models would be beneficial to consider before a wellness program is implemented.

Such evidence is presented in a research study conducted by the Institute of Labor and Industrial Relations of the University of Michigan that details the costs of implementing four different models or designs for worksite wellness programs in four automobile manufacturing plants in southeastern Michigan, and will compare these models for cost-effectiveness. The four manufacturing plants are similar in size and demographic characteristics. Health risk screening was conducted in an identical manner at all four study sites over a three to four week period at each site. Screening was conducted on employees' own time, before and after work, at lunchtime, and on breaks. The screening interview included three different blood pressure measurements, height and weight, and questions about health history, smoking, exercise frequency, and interest in health promotion programs. At the end of the 15-minute screening interview, each employee was

counseled about his/her risk factors and what he/she should do about them. Some 93-95 percent of the employees screened had one or more of the four risk factors of cardiovascular disease: high blood pressure or diagnosed hypertension, obesity, cigarette smoker, ex-cigarette smoker or lacking regular physical exercise. Diagnosed hypertension and ex-smokers were used because of the possibility of relapse (Erfurt 8).

After initial screening was completed, a 3-year study period began during which each plant implemented a different wellness program design as follows:

1. Site A (health education): This site tested a common model for health promotion, in which media-focused health education strategies were used to encourage health improvement and participation in health education classes. Health education classes were offered at least twice a year at the plant throughout the study period , and blood pressure monitoring was available in the plant medical department. Promotional events such as a health fair also took place (9).
2. Site B (fitness facility): This site took a very different approach to wellness, setting up a physical fitness facility for the use of employees, with extensive aerobic and muscle-building exercise equipment. The facility was staffed by certified athletic trainers available whenever the plant was operating. This site tested the effects of the presence of a fitness facility on employees' health risk factors (9).
3. Site C (health education and follow-up): The underlying assumption of this model is that behavior change requires not only awareness, but

also support, encouragement, and assistance with problem-solving, and a menu of different kinds of intervention strategies (classes, mini-groups, one-to-one counseling, and guided self-help). At this site health education classes were offered. In addition, this program included wellness counselors who contacted the employees with identified health risks (high blood pressure, obesity, cigarette smoking) every 6 months, and counseled them regarding risk reduction strategies. They offered assistance to those who said they wanted to make changes on their own ("guided self-help"), and they worked with the external wellness program provider to schedule classes and mini-groups (provided when there were not enough people signed up to make a full class). The employees were encouraged to get regular exercise, but neither physical fitness facilities nor equipment were available within the plant. Emphasis in this site was on one-to-one outreach by wellness counselors to at-risk employees to encourage risk-reduction activities (10).

4. Site D (health education, follow-up and plant organization): In addition to utilizing all of the strategies employed at Sites A and C, the program at this site used plant-wide organizational strategies to encourage and support employees in making health improvements. The underlying rationale for this model recognizes that many behaviors associated with health risks are pleasant and functional in the short run for reducing stress or managing social situations. Thus,

> the model emphasizes learning positive substitutes for behaviors that create long-term health risks. Emphasis at this site was on promotion of health for all employees, utilizing both promotional events and one-to-one outreach (10).

In summary, the four models differed as follows:

Site A: health education only,

Site B: physical fitness facility,

Site C: health education and follow-up counseling,

Site D: health education, follow-up counseling, and plant organization. Both Sites A and B utilized the traditional medical approach to wellness, in which people identified as having health problems or risks are advised to take action to reduce their risks (e.g., are advised to quit smoking), and resources are made available that they can use (classes, printed materials, fitness centers). However, there is no further outreach to individuals, nor any on-going support to assist them in making changes. Sites C and D, on the contrary, both provided systematic outreach and follow-up counseling throughout the study period (11).

This research study reported the costs of operating each of the four program models , and examined these costs in relation to effectiveness at reducing the targeted health risks and preventing relapse. This analysis addressed the following hypotheses:

Hypothesis 1. Worksites with wellness programs that include routine one-to-one outreach and follow-up counseling (Sites C and D) will show fewer health risks after 3 years than programs without this component (Sites A and B), when

health risks are defined as uncontrolled high blood pressure, cigarette smoking, obesity, and lack of exercise (13).

Hypothesis 2. The average cost per risk reduced and relapse prevented will be lower for programs providing regular one-to-one outreach and counseling than for programs organized around a fitness facility without such outreach and counseling (13).

Participation rates in on-site physical fitness programs were significantly higher at Sites B and D (where fitness facilities and programs were a central part of the design) then at Sites A and C, with Site D having the highest overall rate. However, frequency of exercise decreased over the study period at Site B. Despite the nearly three-year existence of the fitness center, Site B had the lowest percentage of employees exercising three or more times of week at the end of the study period. Participation rates in treatment for high blood pressure (for the hypertensives) were significantly higher at the sites with follow-up (Sites C and D) than at the other two sites, and participation rates in worksite smoking-cessation programs and worksite weight loss programs were five to ten times greater at Sites C and D than at Sites A and B (17).

There was also a difference reported on control of high blood pressure, weight loss, and smoking cessation between the four models. The two sites with follow-up and a menu of program interventions (Sites C and D) showed significantly better results than the sites without these components. At the end of 3 years, Sites C and D showed that up to 82 percent of people with hypertension had blood pressure readings below 160/95 and 47 percent had blood pressure

readings below 140/90. Of the overweight employees, 51 percent maintained a weight loss of 10 pounds or more. Twenty percent of the smokers were no longer smoking, 94 percent of the ex-smokers did not relapse into smoking, and 57 percent of all smokers and ex-smokers were nonsmokers at the end of the 3-year study period. The annual direst cost per employee for post-screening interventions was $17.68 for Site A, $39.28 for Site B, $30.96 for Site C and $38.57 for Site D (17).

It was concluded that these cost-effectiveness analyses justify the addition to wellness program designs of regular outreach, follow-up counseling, and a menu of health improvement programs, but do not justify the addition of fitness facilities without outreach and follow-up counseling. Results for the sites with follow-up components were substantially better than for the site with a fitness facility but no outreach or follow-up. This conclusion supports the initial hypothesis that behavior change requires sustained support, encouragement, and assistance with problem solving, along with a variety of options for making changes (24).

When the overall cost-effectiveness figures for Sites C and D (as opposed to incremental cost-effectiveness produced by comparison with Site A) was examined, it was found that it costs less than one dollar per employee per year to engage each additional 1 percent of the at-risk population into treatment for high blood pressure or into on-site programs for weight loss and/or smoking cessation, and to reduce risk or prevent relapse in each additional 1 percent of the health

risks among employees who had high blood pressure, were overweight, smoked or had previously smoked cigarettes, or needed regular exercise (24).

This excellent research study went beyond measuring the effectiveness of a company's wellness program. It compared four different wellness programs in order to ascertain which one had the best overall results. It was clearly shown that wellness programs that included routine one-to-one outreach and follow-up counseling will not only achieve better results in lowering health risks, but are more cost-effective.

Along with good health and physical fitness, wellness programs strive to increase job satisfaction and decrease absenteeism. A research study, which was funded by the American Journal of Health Promotion, was performed to investigate the influence of three different employee wellness program treatments on absenteeism, job satisfaction, and physical fitness as a means of evaluating the efficacy of a 5-month workplace wellness pilot project among public sector employees (Pike 394).

One hundred seventy employees from four different government departments were randomly selected from more than 300 volunteer applicants and were divided into three treatment and two control groups. Before program and after program job satisfaction were measured in all subjects using the Work Environmental Scale. Before program and after program physical fitness was determined using a standard battery of tests, and absenteeism data were collected at the conclusion of the project and compared to absentee data for the same period one year earlier. Additionally, lifestyle seminar participants completed pre- and

posttest questionnaires assessing changes in lifestyle attitudes and practices. Finally, all subjects responded to a questionnaire assessing opinions, value, and recommendations for future programming after the program (394).

The results showed a significant reduction in absenteeism of 1.5 days in the three treatment groups compared with the two control groups. Improvements in job satisfaction, physical fitness, self-image, and lifestyle attitudes and practices were all significant in respective treatment groups compared with controls. Finally, all groups demonstrated positive opinions about the pilot program regardless of their level of involvement (394).

The significant results achieved from this pilot program suggest the wellness interventions were effective in implementing fitness and job satisfaction and reducing absenteeism. These outcomes and the high enthusiasm for the wellness program among participants suggests a need for government-wide introduction that can be defended from an associated positive cost benefit (394).

According to a report published in 1994, many wellness programs do not realize their full potential in preventing disease and producing savings in health care costs. This 440-page report, "Health Promotion & Disease Prevention Programs: Rx for the 1990's?" was published by Corporate Health Policies in conjunction with Marketdata Enterprises Inc. of Valley Stream, N.Y. The researchers interviewed employers, groups representing health care providers and wellness program vendors. The researchers also analyzed federal surveys, surveys conducted by associations and benefit consultants and published literature on health promotion and disease prevention (Cowans 12).

The report states that many wellness programs will not do much more than reimburse employees for medical tests such as cholesterol tests and mammography. It also concludes that there is little guarantee of results if the program does not provide full coverage of services, behavioral risk programs like commercial diet plans and smoking cessation, and screening follow-up to ensure that people get treatment or change their behavior (12).

One controversial strategy to change employees' behavior is the use of financial health incentives to decrease health risks. It can consist of financial rewards, punishments or a combination of the two. Some say that using the "pocketbook" is the best way to get people's attention (Caudron 37). For example, Hershey Foods Corp. implemented a wellness incentive plan designed to make workers sit up and take notice of their health risks. Under the program, the insurance premium employees pay is adjusted according to how well they fare on the following risk factors: tobacco use, blood pressure, cholesterol, exercise and weight. All of the employees use to pay the same per month for medical insurance. Now they will have their insurance premium increased or decreased from the original base rate. For example, nonsmokers pay $11 less per month in health insurance premiums; smokers pay an extra $32. Also, employees who weigh less than 120% of their ideal weight as defined by the Metropolitan Life Insur5ance Co. pay $4 less per month; those above the weight pay an extra $32. Hershey's reasoning for having this incentive plan is the belief that those who live healthy lifestyles should not have to pay as much as those who do not. Using the pocketbook is the best way to get the employees' attention, especially those who

medically are at high risk. They take some action to address the substantial premium increases every year (37).

There are, however arguments against having these types of incentive plans. For instance, there may be legal issues to consider. Existing civil rights laws don't protect against lifestyle discrimination, because smokers and people who refuse to wear seat belts are not named as protected classes. Still, without intending to, some of these programs may discriminate against groups that are at high risk for certain health conditions because of socioeconomic or racial status. Programs using financial incentives to stimulate behavior changes may fail to recognize that a lack of education, inadequate financial means, deep-seated cultural traditions, unavailability of health care services or other barriers may make it hard, if not impossible, for individuals to alter their behavior. A single mother living in poverty, for example, may be unable financially to provide her family with a healthy diet (36).

Another drawback is that high blood pressure, cholesterol and excessive weight may be due, at least in part, to hereditary factors (36). For example, an under-active thyroid can be hereditary and cause weight gain. Programs that seek to reduce health risks that have some genetic basis may be found discriminatory under the American with Disabilities Act, because the legislation protects individuals who have "physical or mental impairments." The courts previously have ruled that having a genetic trait for a particular disease constitutes an impairment. Under the ADA, employers can reject only applicants unable to

perform the job. Concern about medical costs is not an acceptable reason to withdraw a job offer (36).

If an employer is considering financial incentives, they need to address these issues. They must also keep in mind that the population that most needs to be targeted is those employees that are considered high risk. Wellness programs need to encourage this population to change their health-related behaviors to improve those health components that they have at least some control over.

Too many wellness programs get derailed because companies fail to link them with other benefits and business strategies. For example, wellness programs can be linked to human resources planning particularly when addressing such issues as morale, productivity, absenteeism, turnover and safety education. Wellness programs can be linked to managed care strategies by encouraging the health care providers to offer health-promotion programs and to establish and achieve health-screening standards. (Lewis 26).

In analyzing the literature under review, it can be concluded that wellness programs have become increasingly popular and generally regarded positively by both employers and employees. In some of the literature, representatives form companies have claimed a return of two, three or more dollars for every dollar invested in their wellness program. For example, Joe Leutzinger, the health promotion manager for Union Pacific Railroad states that their wellness program achieved a return of $2.77 for every dollar invested (Goldstein 144). Statements like these are intriguing, but would be more meaningful if they would publish the details of their cost/benefit analysis. The existence of independent research

performed on the outcomes of the wellness programs would make it even more meaningful.

There is a definite pattern in the literature that shows the success companies' wellness programs have had in positively affecting their employees' lifestyle as it pertains to their health. Also, there is a trend toward using follow-up counseling to enhance the chances of a wellness program succeeding. This analysis addresses the following hypothesis:

Hypothesis

By encouraging the healthy and safe lifestyles of their employees, employers can significantly reduce health care costs as well as increase employee morale and productivity and decrease absenteeism and turnover.

Chapter III

SELECTIVE REVIEW AND EVALUATION OF RESEARCH

In Chapter II, a review of the literature concerning the use of wellness programs resulted in the following hypothesis: By encouraging the healthy and safe lifestyles of their employees, employers can significantly reduce health care costs as well as increase employee morale and productivity and decrease absenteeism and turnover. In this chapter, the research studies will be reviewed and evaluated. Several authors have quoted select corporate managers as saying that their wellness program has been a great success and claim a substantial return on their wellness investment. Unfortunately, some of these corporate managers do not offer statistical or research data to support their claims. However, there has been some very good research studies done on wellness programs, which were reviewed in Chapter II.

One of the more significant research studies concerning wellness programs, has been published in Personnel Psychology titled "The Cost-Effectiveness of Worksite Wellness Programs for Hypertension Control, Weight Loss, Smoking Cessation, and Exercise" by John C. Erfurt, Andrea Foote, and Max A. Heirich. This research study details the costs of implementing four different models of worksite wellness programs in four automobile manufacturing plants in southeastern Michigan. These models were compared for reducing targeted health risks and cost-effectiveness.

The four models were: health education only, physical fitness facility, health education and follow-up counseling, and health education, follow up counseling, and plant organization.

There was a consistency of conditions at each of the four plants using one of the four models. The four plants were similar in size and demographic characteristics. Health risk screening was conducted in an identical manner at all four study sites. The screening included measurements such as blood pressure and personal interviews. The advantage of personal interviews is that there is opportunity for feedback and clarification. In this study, there was no actual control group. However, Site A, which used health education only, was used to estimate the level of effectiveness to be expected when there are no special physical fitness services, no follow-up counseling, and no menu of health improvement programs. Effectiveness of the wellness models at the three other sites was computed by subtracting the level of effectiveness found at Site A from that at each of the other three sites, to estimate the additional effectiveness achieved at each site as a result of offering the added program components.

Effectiveness was measured by computing the percentage of the four identified health risk factors (blood pressure, overweight, smoking, and lack of exercise) that were reduced or relapse prevented at each site. There were two levels of effectiveness shown: high level and moderate level. The high level represented risk reduction/relapse prevention when the following measurements were reached: blood pressure now below 140/90, lost 10 lbs. or more, smokers quit and ex- smokers did not relapse, and the employee is exercising three or more times a week. The moderate level represented risk reduction/relapse prevention

when the following measurements were reached: blood pressure now below 160/95, lost 3 lbs. or more, and the last two being the same as the high level. The medical and cost measurements were done consistently for all four models. Therefore, there was good experimental control in this study.

In each of the manufacturing plants, a large sample of employees were randomly chosen through the screening process. The size of the active workforce ranged from 1560 at Site A to 3260 at Site B. Participation percentages and demographic characteristics were similar for each site. Participation in the initial screening ranged from 75-88 percent of active employees. The population screened were predominately male (83-89 percent) and white 67-76 percent), with an average age of 39-43 years. At each plant, these figures reflected the workforce as a whole (Erfurt 8). However, in terms of gender, the four workforces represented a considerably higher percentage of males than most workforces and the results could be somewhat less meaningful to females. The race and age percentages were representative of most workforces in this country. Thus, screening reached the preponderance of employees, and there is no evidence of bias in participation. Some 93-95 percent of the employees screened had one or more of the four risk factors of cardiovascular disease: high blood pressure or diagnosed hypertension, obesity, cigarette smoker or ex-smoker, or lacking regular physical exercise. These were the risks factors targeted for reduction and relapse prevention. The sample of employees that were rescreened, which took place three years later, were similar in participation rates and demographic characteristics to the screened sample (8).

The study details the costs of the wellness programs that were implemented at the four study sites during the intervention period. It shows the annual costs for each of the programs, the average annual cost per employee, and the incremental annual cost per employee of the services added at sites B, C, and D. The incremental figures were computed by subtracting the cost of program operations at Site A (the site with health education only) from the cost at each of the other sites (18).

The study also shows the percent of the identified health risks that were reduced or relapse prevented, for each of the four study sites and the total number of risk factors found among the employees at each site who had one or more of the four targeted risk factors. Each employee in the sample averaged 2.2 risk factors. The unit of analysis in this statistic is not the employee, but the risk factor. An employee with two health risks may have succeeded in reducing one risk, but not the other. The reduction in risks ranged from 32 percent at Site B to 45 percent at Site D, for high level reduction or relapse prevention, and from 36 percent to 51 percent for moderate reduction. The differences across sites were statistically significant for both measures, based on analysis of variance (19).

The incremental effectiveness and cost-effectiveness of the models tested at Sites B, C, and D, were compared with Site A. The figures are computed by dividing the increment in percent of risks reduced/prevented by the increment in annual cost per employee at Sites B, C, and D. The additional cost per employee per year (beyond the costs at the comparison site) for producing an additional reduction in one percent of risks was shown (20).

The researchers conclude that these cost-effectiveness analysis justify the addition to wellness program designs of regular outreach, follow-up counseling, and a menu of health improvement programs, but do not justify the addition of fitness facilities without outreach and follow-up counseling (23). Results for the sites with follow-up components were substantially better than for the site with a fitness facility but no outreach or follow-up. The statistical methods used in this study were sound and thorough and the data obtained does support the researcher' conclusions.

There were a few limitations of the study design noted by the researchers. The study design was limited in that each program model was tested in only one plant location, and one must be concerned about whether variables unique to a location may have affected the outcomes. This limitation is less serious than it might have been, because the program components hypothesized to produce the major effects (systematic one-to-one outreach and follow-up counseling) were provided at two sites (C and D) and not at the other two. Also, in using this data, the reader must be aware that there are basic costs of operating any wellness programs that have not been included in the comparisons made in this study. Some of these costs will vary widely from company to company-e.g., the cost of space. This analysis was intended to examine costs that differ significantly across program models, rather than all costs. Also, as stated earlier, the populations screened were predominantly male (83-89 percent). The results could be less meaningful for females. Even so, the results could have been broken down by gender, race, and age group to see if there were any significant differences between these groups.

Another significant research study was published in The American Journal of Health Promotion titled, "Efficacy of Computerized Health Risk Appraisal as Part of a Periodic Health Examination at the Worksite" by Donald H. Gemson and Richard P. Sloan. This study, in which the purpose is stated in the title, took place in a large financial services firm in New York City. It consisted of a randomized, controlled trial comparing change in health behaviors where a six-month follow-up was conducted after the appraisal was initiated.

A total of 161 employees volunteered for a worksite periodic health examination and were randomly assigned to either the Health Risk Appraisal (HRA) group or the control group. Both groups received a physical examination and completed the HRA questionnaire, but only the HRA group received the HRA report and counseling. Participants were assured that results of the evaluation were confidential. The baseline characteristics (such as age, appraised age, cholesterol level, blood pressure, and weight) were similar between HRA and control groups (Gemson 463).

Comparisons were made between the HRA and control group in: change in risk factors at six months follow-up, change in risk factors by "health age"(high health age or low health age) among HRA group, and change in risk factors by HRA status among high health age group. Participants categorized as high health age demonstrated greater improvements in cholesterol, physical activity, blood pressure, weight, and change in appraised age than did participants categorized as low health age. To help determine whether the greater improvement seen in the high health age group was a result of regression to the mean rather than the effect of the HRA feedback, HRA participants with a high health age were compared

with control group participants with a high health age. HRA participants demonstrated significantly greater improvements in risk factors, including change in appraised age (reduced by 5.7 years among HRA participants compared with 0.6 years reduction among control group participants) (464).

161 participants underwent the initial evaluation, and 90 of the 161 patients returned for follow-up evaluation. The dropout rate was 47 percent in the HRA group and 41 percent in the control group. A comparison between those who returned for follow-up and those who did not revealed no statistically significant differences with respect to demographic characteristics. Individuals were coded by number to assure confidentiality (464).

Multivariate analysis of variance was used to analyze changes from baseline to follow-up in outcome variables, including changes in blood cholesterol, weight , physical activity, and use of seatbelts. Evaluation of the 90 patients who returned for follow-up revealed a statistically significant improvement in computerized health age for those who had received the HRA feedback compared with those who had not. Because computerized health age is a composite variable based on many different health behaviors and conditions, change in individual behaviors and conditions were examined as well. Comparisons of change scores revealed that the HRA participants were significantly more likely than the control subjects to increase their self-reported physical activity and also demonstrated a trend toward greater self-reported use of seatbelts. There were no statistically significant differences in changes in cholesterol, weight, or systolic blood pressure, although for each of these factors, the HRA group reduced their risk more than the control group. Because the

number of smokers in the entire sample was small (approximately 10 percent), analysis of the effect on smoking was not conducted (464).

The researchers of this study conclude that computerized HRA contributed to health behavior change beyond that produced by a physician-based periodic examination among employees at a large financial services firm. The statistical methods used in this study were sound and thorough and the data obtained does support the researcher's conclusions. However, in order to fully summarize and judge the researchers conclusions, the limitations of the study must be taken into consideration.

There are some limitations to this study that may restrict its generalizability to other settings and populations. Participants who self-select into worksite health promotion programs may differ significantly from the total employee population; data were not available in this study to compare participants and nonparticipants. There was a significant dropout from the initial participants, although there were no statistically significant baseline differences between those who returned for follow-up and those who did not. Changes in exercise and seatbelt use were based on self-report and were not independently validated. Because the HRA participants received increased attention during the counseling session, it is possible that the greater improvement in the HRA group resulted from additional attention rather than the HRA itself; because the study did not measure time spent in counseling, it was not possible to assess this potential confounding factor. Finally, this study evaluated HRA in the context of a comprehensive physician-based periodic health examination at the worksite. It

does not address the effectiveness of HRA in other settings and circumstances (465).

As the researchers of this study have stated, it can be concluded that the data from this study demonstrates that the use of computerized HRA as part of a physician-based periodic health evaluation was associated with a greater improvement in risk factor profile and appraised age in the HRA group in comparison to the control group. Although the limitations of this study preclude any definite conclusions, the researchers state that the study findings are consistent with a growing body of literature supporting the use of HRA at the worksite.

Another significant research study was published in the American Journal of Health Promotion titled, "Evaluation of the 1990 Centers for Disease Control and Prevention Smoke-Free Policy" by Seth L. Emont. This study was done on smoking behavior and other tobacco use behaviors, the effect of the smoke-free policy on air-quality, and acceptance of and compliance with the smoke-free policy among Centers for Disease Control and Prevention (CDC), and Agency for Toxic Substances and Disease Registry (ATSDR) employees approximately six months after policy implementation.

CDC conducted a telephone survey on tobacco use habits on a stratified random sample of 1181 employees located throughout the United States. This sample represented about 22 percent of the workforce. One advantage of taking a survey sample over the telephone is that it allows for feedback and clarification. Since the sample was stratified and random it was appropriate to reflect the entire employee population. Since the researchers were interested in smoking behavior

and cessation activities of employees, and because it was predicted that the overall smoking prevalence would be very low, they attempted to oversample smokers. The association between higher smoking rates among persons with lower income levels has been well established. Thus an attempt was made to oversample groups for which higher smoking rates would be expected (Emont 457). This seems to be appropriate for this study.

Demographic and smoking history variables, attitudes toward and impact of the smoke-free policy on smoking behavior and self-report changes in air quality were the measures used. There were two questions that the employees who smoked were asked: "Has the smoke-free policy had any effect on your interest in quitting smoking?" "Have you quit smoking for one day or longer after institution of the smoke-free rule?" Also, daily cigarette consumption was recorded for at-work and off-work consumption. Questions were asked of smokers and non-smokers of the appropriateness of the policy and on the effectiveness of it on keeping smokers from smoking in areas where it is not permitted and increasing the quality of the air at work (457).

The researchers broke out the sample population by sex, age, race, educational status, and job category. The percentages of employees in each group that have smoked before the smoke-free policy started were also stated. For instance, 11 percent of the 535 males and 11.2 percent of the 646 females have smoked before the smoke-free policy started. The effect of the smoke-free policy on the employees was not broken down by demographics.

The results showed average self-reported, daily consumption significantly decreased after the smoking ban took effect. Overall, 90 percent of the employees

supported the smoke-free policy and 80 percent of the employees believed that smokers were complying with the smoke-free policy. Most employees believed that the air quality of work areas and nonwork areas (65 percent and 69 percent, respectively) had improved since the smoke-free policy was implemented (459).

The researchers state that these findings are consistent with previous evaluations of smoke-free policies and suggest that most employees generally are supportive of workplace smoking restrictions. Such policies can also have a positive impact on smoking behavior and perceived air quality (459). The data does support the researchers' conclusions.

A potential limitation of the study is that classification of smoking status was based on self-report. However, the anonymity of respondents to the survey, the nonthreatening approach of the assessment and intent of the smoking cessation initiative to determine appropriate smoking cessation methods for employees, and the reliability of self-reported smoking status indicated in previous investigations minimizes any effects of misclassification (459).

Compliance with the smoke-free policy and overall air quality were also based on self-reports. It is possible that smokers may have underreported noncompliance with the policy whereas nonsmokers may have overreported smokers' noncompliance with the policy. In either case, however, the majority of survey respondents reported that smokers were complying with the policy and that there was an overall improvement in air quality regardless of smoking status (459).

Another significant study concerning fitness programs was published in Personnel Psychology titled, "Promoting Regular Exercise in Organizational

Fitness Programs: Health-Related Differences in Motivational Building Blocks" by David A. Harrison and Laurie Z. Liska. In this study, Hypotheses were proposed about relations among "building block" components of the motivation to attain exercise goals in an organizational fitness program, as well as about health-related individual differences in those components. The immediate determinant of goal attainment is goal commitment. The building blocks of goal commitment are the factors that make the goal attainment attractive and perceived barriers that make up perceived control or task-specific self-efficacy regarding goal attainment. In this study, the researchers were also concerned with health-related individual differences in these motivational components.

A field study was employed of 107 full-time employees taking part in a fully developed employee fitness program at a large university. The demographic profile of the sample closely matched the demographic profile of all fitness program members; non-response bias was not detected for these and other demographic and organizational variables. The program appealed mainly to employees in clerical and para-professional jobs, which consisted of 75 percent of the sample, and females, which consisted of 81 percent of the sample. During individual interviews, the participants were asked to consider a specific goal: thirty or more minutes of vigorous exercise, an average of three or more times a week, for 8-12 weeks. During the interviews, several individual differences were measured, as well as perceived barriers to successful attainment (Harrison 54).

As the hypotheses dictated, the individual differences were related to motivational components, and the motivational components to subsequent exercise behavior in the fitness program. The first part of each interview was oral,

containing questions about how the participant evaluated the administration and features of the fitness program. Since these interviews were not anonymous, a social desirability bias may occur. A participant may answer the questions based on creating a favorable impression either consciously or unconsciously. These questions were designed to maximize the face validity of the interview session, and to ease subjects into later forced choice questions. To ensure that the motivational building blocks used in the study were grounded in the population at hand, and elicitation study was conducted. A one-page survey was sent to all fitness program members two months prior to the beginning of the main study. The questions elicited relevant outcomes and perceived barriers.

Goal attainment was measured using the archival exercise records. Goal commitment was measured in a straightforward way by averaging responses to the statement: "I am strongly committed to accomplish the..." (exercise goal mentioned earlier). Responses were measured on two 7-point semantic differential scales. One ranged from "extremely unlikely" (-3) to "extremely likely" (+3); the other ranged from "extremely strong commitment" (+3) to "extremely weak commitment" (-3). This type of scales gives more information than other types of scales. Perceived barriers were measured by asking questions such as, "How likely is it that an injury will keep you from attaining the goal?" The same type of scale was used on this question. Health-related individual differences were measured using self-reports obtained in the interview and physiological records obtained in a health screening session at the beginning of the semester. The self-reports included somatic complaints, amount of smoking, number of sickness absences taken in the previous twelve months, height, and weight. Also shown

were the means, standard deviations, and intercorrelations of all of the motivational and health-related variables, along with estimated reliabilities (58).

Supporting Hypotheses I, the correlation of goal attainment (scored "1" if the employee exercised an average of three or more times a week after the interview and "0" if less than three times a week) with goal commitment was significant. The researchers used a hierarchical multiple regression analysis, using future performance as the dependent variable. This is an appropriate statistical method when two or more independent variables are being tested against a single dependent variable. Supporting Hypothesis 2a and 2b, self-efficacy and each of its perceived barrier components also had significant correlations with goal attainment, underscoring the importance of these variables in the motivational process. Hypothesis 3a and 3b were also strongly supported by the health data. Employees who complained more about aches and pains, took more sick leave, were more obese, or smoked, all perceived less control/efficacy than there healthier counterparts over health and work- related barriers to attaining the exercise goal. In other words, employees with high health risks were from .5 to 1.2 standard deviations higher in perceived barriers than employees with low health risks. The researchers' conclusions are supported by the data obtained (61).

There are a few limitations to this research study. The sample was predominantly white-collar with only 19 percent being male. Replications over time and across organizational and demographic contexts would be especially useful. The sample contains only 6 percent of the employees in the entire organization, which greatly limits generalizations to those program participants who were not in the study, and especially to those who never joined the program.

There is a clear need to study those individuals in future research, as they are often the employees at highest health risk.

Yet another research study was significant because it addressed decreasing employee absenteeism and hence increasing employee productivity. It is titled "Comparison of Maternal Absenteeism and Infant Illness Rates Among Breast-feeding and Formula-feeding Women in Two Corporations" and was published in the American Journal of Health Promotion by Rona Cohen, Marsha B. Mrtek and Robert G. Mrtek.This descriptive longitudinal study was used to investigate the relationship between maternal absenteeism necessitated by infant illness and the use of commercial formula or breast milk as the infant's nutritional source. The dependent variables were infant illness episodes, incidence and length of maternal absences from work, illness diagnosis, and severity of the disease. The independent variable was the infants' source of nutrition, either commercial formula or breast milk. Each mother and infant was observed until weaning or for one year after birth to provide comparable data.

The study was conducted at two corporations with on-site lactation programs. All participants had medically uncomplicated deliveries. This would eliminate the potential influence that a complicated birth may have on the baby's health (Cohen 149). However, there may be other factors that affect an infant's health that the researchers did not take into consideration such as the health and diet of the mother. A total of 101 mothers were studied in the two companies; 59 fed breast milk, and 42 used commercial formula.

The data collected in this study were attribute counts summarized as percentage rates: number of ill babies, number of illness episodes, days of

maternal absenteeism, diagnostic category of illnesses and severity of illnesses. Confidential participant diaries provided the descriptive data on infant illnesses and relevant absenteeism that the lactation consultant verified with health care providers and through employer attendance records. Results from this study are reported with both the infant and the individual illness episode as units of analysis, with statistical comparisons being made across the nutritional source groups. The frequency and severity of illness episodes were compared separately between nutritional sources within each company. Data from the two companies were combined after no significant differences were found between the companies. Null hypotheses were tested across the nutritional groups for equivalent percentage rates among disease prevalence, severity of illness episodes, and maternal absence days per illness episode (149).

Approximately 28 percent of the infants were "well babies," who experienced no illnesses during the study. The "well babies" group was composed of 24 breast-fed babies (86 percent) and four formula-fed babies (14 percent). The sixfold difference between rates of occurrence in the two nutritional groups is statistically significant. This proportion did not differ significantly between the two companies. Each episode of infant illness is a potential cause of maternal absenteeism. Therefore, the only measurement for well babies was how many of them were in each group. All other results reported illness episodes of as the unit of analysis for the babies that were not well (149).

Absenteeism was reported only when directly attributable to infant illness. Of 40 illnesses causing 1 day's absence, 25 percent occurred in breast-fed babies and 75 percent in formula-fed babies. The rate difference is significant on the

basis of an expectation of equal percentage occurrence in the two groups. Absences lasting more than one 8-hour day up to 4 full workdays were reported for 11 episodes in the breast-feeding group and 15 in the formula-feeding group. The remaining illnesses, regardless of cause, were complicated and often required hospitalization. Absences caused by theses seven episodes ranged from 5 to 25 days (150).

The researcher concluded that results of this study support widely published findings that, when compared with formula-fed babies, infants receiving breast milk have lower rates and less severe episodes of the common illnesses studied. This study also suggests that corporate lactation programs would reduce both health care costs and maternal absenteeism (152). The data does support the researcher's conclusions.

These findings should be considered preliminary because of limitations of the study methods. This study did not use a truly experimental design. Participants were self-selected on the basis of nutritional choice and were a convenience sample from programs already in place. A comparison group with similar demographic characteristics was used rather than a true control group. Equal group sizes could not be achieved within the constraints of this nonrandomized study because of the prevalence of breast-feeding. Observations based on these groups indicate trends, but should not be used for predictions regarding other groups. These results must be viewed within this limited context and should be corroborated using true experimental methods before attempts are made to generalize the findings (154).

The impact of this study on the hypothesis is that it shows an example of how an inexpensive wellness component can increase employee morale and productivity and decrease absenteeism and turnover. Since infant health is an important factor in how often the mother is absent from work, the less the infant is sick, the less the mother will be absent. Therefore, the less the mother is absent from work, the more productive she will be. The healthier the infant, the less stress on the mother which may increase morale and decrease turnover. This study showed evidence that infants that are fed breast milk tend to be sick less often than infants that use formula to feed. Therefore, employers can achieve these positive outcomes by encouraging employees who are new mothers or mothers to be to breast- feed their infants. The employer can make it easier for these mothers to do this by having a lactation program.

Chapter IV

RESULTS

This chapter will summarize the results of the evaluation/data analysis from the most valid, pertinent research studies.

One of the studies detailed the costs of implementing four different models of worksite wellness programs in four automobile manufacturing plants in southeastern Michigan. This study was published in Personnel Psychology entitled "The Cost-Effectiveness of Worksite Wellness Programs for Hypertension Control, Weight Loss, Smoking Cessation, and Exercise" by John C. Erfurt, Andrea Foote and Max A. Heirich. The cost effectiveness of each site was first measured by computing the annual direct cost per employee for the post-screening interventions. These costs totaled $17.68 for Site A (the comparison site that offered health education classes), $39.28 for Site B (physical fitness facility), $30.96 for Site C (health education plus follow-up counseling), and $38.57 for Site D (health education, follow-up counseling, plus plant organization for health promotion). The incremental annual cost per employee was also stated which represented the cost of adding the program components of Sites B, C, and D from the basic cost of health education only (Site A).

The next set of statistics showed the percent of the identified health risks that were reduced or relapse prevented, for each of the four study sites. The reduction in risks ranged from 32 percent at Site B to 45 percent at Site D, for high level reduction or relapse prevention, and from 36 percent to 51 percent for

moderate reduction. The differences across sights were statistically significant for both measures, based on analysis of variance. Pair-wise tests showed that Sites A and B were significantly different from Sites C and D, but Sites A and B were not different from each other, nor were Site C and D (Erfurt 19).

These risk reduction figures were then used to compute the incremental cost-effectiveness of the models tested at Sites B, C, and D, as compared with Site A. The incremental percentage of risks reduced/relapse prevented at Sites B, C, and D, beyond those reduced or prevented at Site A are shown. At Site B, the addition of a physical fitness center with attendants produced a decrement (-3 percent) of risks reduced or relapse prevented, as compared with Site A, despite the establishment of the fitness center. Both Sites C and D produced increments beyond that achieved at Site A, with Site C yielding an additional 9 percent of risks reduced/relapse prevented, and Site D an additional 10-12 percent (20).

The incremental effectiveness of the program at each experimental site in reducing risks/preventing relapse, per dollar spent per employee annually on the wellness program was presented next. The figures are computed by dividing the increment in percent of risks reduced/prevented by the increment in annual cost per employee at Sites B, C, and D. Again for Site B there was a decremental percentage of risks reduced/relapse prevented, indicating that the greater amount of money spent on the fitness facility provided at Site B produced less risk reduction than the comparison program. For Sites C and D, the incremental amount of risk reduction/prevention per dollar spent was approximately half a percent per dollar spent (20).

The additional cost per employee per year (beyond the costs at the comparison site) for producing an additional reduction of 1 percent of risks was $1.48 and $2.09 at Sites C and D respectively for high level of risk reduction. For the moderate level of reduction, the comparable figures are $1.48 and $1.74 for Sites C and D. The percent of effectiveness at reducing risks/preventing relapse was about 1.3 percent to 1.5 percent per dollar spent per employee per year, and the total cost for each percent of risks reduced or relapse prevented was less than one dollar per employee per year ($.66 and $.76, at Sites C and D, respectively) (21).

Another research study published in the American Journal of Health Promotion entitled "Efficacy of Computerized Health Risk Appraisal as Part of a Periodic Health Examination at the Worksite" by Donald H. Gemson and Richard P. Sloan also had pertinent results. A comparison of the change in risk factors at six months' follow-up revealed that the Computerized Health Risk Appraisal (HRA) participants were significantly more likely than the control subjects to increase their self-reported physical activity and also demonstrated a trend toward greater self-reported use of seatbelts.

The change in risk factors by "health age" status among HRA group members was also presented. Participants whose computerized appraised age exceeded their chronologic age were categorized as "high health age" and those whose computerized appraised age was the same as or less than their chronologic age were categorized as "low health age." Participants categorized as high health age demonstrated greater improvements in cholesterol, physical activity, blood

pressure, weight, and change in appraised age than did participants categorized as low health age (Gemson 464).

To help determine whether the greater improvement seen in the high health age group was a result of regression to the mean rather than the effect of the HRA feedback, HRA participants with a high health age were compared with control group participants with a high health age. HRA participants demonstrated significantly greater improvements in risk factors including change in appraised age (reduced by 5.7 years among HRA participants compared with 0.6 years reduction among control group participants) (464).

The results of a research study on smoking behavior was published in the American Journal of Health Promotion entitled, "Evaluation of the 1990 Centers for Disease Control and Prevention Smoke-Free Policy" by Seth L. Emont. Since the implementation of the smoke-free policy, self-reported daily cigarette consumption declined among current smokers. 21 percent of the smokers reported smoking more than 25 cigarettes per day before the policy was implemented compared with 15 percent after the smoking policy was implemented.

More than half of the current smokers (52 percent) reported that their cigarette consumption during work hours had decreased as a result of the smoke-free policy, 47 percent reported no change in consumption, and less than 1 percent reported an increase during work hours. Only 8 percent of the smokers reported a decrease in off-work cigarette consumption, whereas 71 percent reported no change in consumption, and 21 percent reported an increase in off-work cigarette consumption. About 25 percent of all smokers indicated that the smoke-free

policy had an effect on the interest in quitting smoking, and about 13 percent reported quitting for at least 1 day after the smoke-free rule (Emont 458).

Overall, about 90 percent of the employees supported the smoke-free policy. A significantly greater percentage of employees who formerly smoked (90.1 percent) and employees who never smoked (96.2 percent) supported the policy than did those who currently smoked (56.3 percent). About 80 percent of those surveyed said they believed that smokers were complying with the smoke-free policy. A majority of the employees said that the air quality of work areas (64.6 percent) and nonwork areas (69.2 percent) had improved since the smoke-free policy was implemented, although former and never smokers were significantly more likely than current smokers to report this improvement (459).

The results of a study on fitness programs was published in Personnel Psychology entitled, "Promoting Regular Exercise in Organizational Fitness Programs: Health-Related Differences in Motivational Building Blocks" by David A. Harrison and Laurie Z. Liska. In this study, Hypotheses were proposed about relations among "building block" components of the motivation to attain exercise goals in an organizational fitness program, as well as about health-related individual differences in those components.

Hypothesis 1: Exercise goal commitment is a direct positive antecedent of the attainment of exercise goals (in an organizational fitness program). Supporting the hypothesis, the correlation of goal attainment with goal commitment was significant (Harrison 61).

Hypothesis 2a: Commitment to an exercise goal (in an organizational fitness program) is a positive function of the attractiveness of goal attainment.

Supporting the hypothesis, goal attractiveness explained a unique 8 percent of the variance in goal commitment (62).

Hypothesis 2b: Commitment to an exercise goal (in an organizational fitness program) is a positive function of the perceived control/self-efficacy regarding goal attainment. Supporting the hypothesis, self-efficacy and each of its perceived barrier components had significant correlations with goal attainment.

Hypothesis 3a: Past health-related factors, such as smoking, somatic problems, frequent sick leave, high cholesterol levels, high resting heart rates, high blood pressure rates, and/or a great percentage of body fat are positively related to perceived health-related barriers to attaining fitness goals (63).

Hypothesis 3b: Individual differences in health-related factors will be positively related to other (not health-related) types of perceived barriers to attaining fitness goals. Hypotheses 3a and 3b were strongly supported by the health data. Employees who complained more about aches and pains, took more sick leave, were more obese, or smoked, all perceived less control/efficacy than their healthier counterparts over health and work related barriers to attaining the exercise goal (63).

Relations between cardiovascular health data and perceived barriers were in the report. Only the LDL/HDL cholesterol ratio was significantly correlated with any of the perceived barrier factors. Employees with higher cholesterol ratios perceived both stronger health-related and work-related barriers to attaining the exercise goal. Although the self-reported or physiological health variables were generally positively related to one another, the cholesterol ratio and especially the

obesity measure stand out as having significant correlations with nearly every other health state (except smoking) (63).

The results of a research study on maternal absenteeism was published in the American Journal of Health Promotion entitled "Comparison of Maternal Absenteeism and Infant Illness Rates Among Breast-feeding and Formula-feeding Women in Two Corporations" by Rona Cohen, Marsha B. Mrtek and Robert G. Mrtek. In the study 28 percent of the infants were "well babies," who experienced no illnesses during the study. The "well babies" group was composed of 24 breast-fed babies (86 percent) and 4 formula-fed babies (14 percent). The sixfold difference between rates of occurrence is statistically significant. This proportion did not differ significantly between the two companies.

A total of 205 illness episodes occurred among 73 babies during the period of this study: 88 occurred in 35 breast-fed babies and 117 in 38 formula-fed babies. The rates are significantly different from expectations, assuming equal illness rates in both groups after adjusting the group size (Cohen 151).

Among the illnesses reported, 51 were labeled mild, 150 moderate, and 4 severe. Within each severe category, the differences between rates of occurrence in the two nutritional groups were not significant. The statistical test for mild illnesses, however, is suggestive of a real difference. Among breast-fed babies, 33 percent of all illness episodes (29 of 88) were "mild," 66 percent (58 of 88) were "moderate," and 1 percent were "severe." This compares with 19 percent (22 of 117) "mild" episodes, 79 percent (92 of 117) "moderate" episodes and 3 percent (3 of 117) severe episodes for the formula-fed babies (152).

Absenteeism was reported only when directly attributable to infant illness. "Well babies," by definition, were never ill. Thus the 24 mothers of well babies in the breast-feeding group and 4 in the formula-feeding group were not absent from work during the course of the study (152).

Of 40 illnesses causing 1 day's absence, 25 percent occurred in breast-fed babies and 75 percent in formula-fed babies. This rate difference is significant on the basis of an expectation of equal percentage occurrence in the two groups. Absences lasting more than one 8-hour day up to four full workdays were reported for 11 episodes in the breast-feeding group and 15 in the formula-feeding group. The remaining illnesses, regardless of cause, were complicated and often required hospitalization. Absences caused by these seven episodes ranged from 5 to 25 days (152).

The results of the research studies summarized in this chapter are interesting and worth discussing, which will be done in the next chapter.

Chapter V

DISCUSSION

Summary

The purpose of wellness programs is to significantly reduce health care costs as well as increase employee moraie and productivity and decrease absenteeism and turnover. Employers who participate in wellness programs attempt to do this by encouraging the healthy and safe lifestyles of their employees. Whether health screening, a proper diet, exercising, avoiding tobacco, and safe behaviors are beneficial to our health is not in question, since this has been well established by the scientific and medical community. The question addressed here is whether wellness programs can achieve the purpose just stated.

There is a pattern set forth by the literature that shows the type of strategy that companies with successful wellness programs have used. As stated in Chapter I, a frequently cited statistic is that approximately 70 percent of health care claims can be attributed to only 10 percent of a company's employees (Overman 42). Before a company starts a wellness program, they need to determine what medical conditions represent the highest costs and who are the most at risk at incurring these costs. The medical conditions with the highest cost are usually cancer, cardio-vascular disease, complicated and/or premature childbirths, and mental health care. Those who have high blood pressure, high blood cholesterol levels, are overweight, and who smoke are the ones that are most at risk for cancer and cardio-vascular illnesses (42). Pregnant women who do not get adequate prenatal

care are the ones that are most at risk for complicated childbirths. Those who have high stress jobs and those who suffer from undiagnosed depression are the ones that are most at risk for mental health illnesses. At this point, research indicates that companies with successful wellness programs screen their employees for risk factors, educate them on the ramifications of these factors, and help them modify their lifestyles (42).

Several companies have stated impressive results since implementing their wellness program. For instance, during the last ten years, the City of Glendale Arizona has had only three rate hikes from their health insurer carrier, the highest increase being a five percent adjustment. Moreover, the city received one rate reduction, as well as three refunds totaling more than a million dollars (Caudron 34).

Ventura County Government was looking for a way to address their rising medical claims, which surged 71 percent in one year. They decided to start a wellness program that intended to motivate their employees to make positive changes in their lifestyle. The theoretical application of their wellness program was to get the employees to do what was necessary to improve their health in order to lower health care costs. Some practical applications are giving the employees health risk profiles, health education, cash bonuses through a point system for showing positive changes in life style, and counseling and follow-up care for those employees with three or more health risk factors (Wojck 7).

Employees that participated in the wellness program generated an average of $212 less per year in health claims than non-participants, and the average participant's risk factors fell to 3.5 from 4.7 before joining. The company also has

found that: eighty percent increased aerobic exercise, sixty-one percent lost weight, eighty-two percent increased seat belt usage, fifty-one percent reduced or quit smoking, sixty-nine percent reduced blood pressure, and eighty-six percent reduced fat intake (7).

After reductions in staff, the Florida Power and Light Company felt that it was important to empower employees to make decisions that would have a positive impact on performance and attendance. The company also needed to reduce their rising health care costs and believed that a wellness program would achieve both. The theoretical application of their wellness program was to make it as easy as possible for employees to take personal responsibility for making positive lifestyle changes in order to lower health care costs and improve performance and attendance. Some practical applications are educating employees on health issues, giving them health risk appraisals and heart and cancer screenings, fitness classes, stress management classes, and pre-natal and postpartum classes (Nesse 107).

The company has stated that for every dollar spent on its wellness program, the company and its employees saved three dollars. The total savings were $2.9 million for FPL and $1.5 for its employees. Using results from the National Heart Attack Risk Study, FPL calculated that employees had improved in five major risk areas from 1991 to 1993: cholesterol, blood pressure, weight, and reduced smoking (107).

The John Alden Financial Corporation believed that it is far more cost effective for both the organization and the individual to identify and head off medical problems at an early stage. Therefore, developing a wellness program

would be appropriate. The theoretical application of their wellness program is to give benefits such as reduced health care costs, a greater ability to attract top talent, reduce employee turnover, and enhance its image among clients. Some of the practical applications are on-site aerobics at corporate headquarters, a Weight Watchers at Work program, on-site mammogram testing, intramural sports team competitions, and cholesterol and colorectal cancer screenings (Epes 32).

One part of the wellness program alone has saved not only money, but also lives. At least two of their employees are alive today because of the company's mammography program, which helped them detect their breast cancers at an early stage. Also, the company saved at least $124,000. This is almost a 17 to 1 return on the company's wellness investment of $7475, which is the cost of providing 115 screenings at $65 each (32).

A government agency decided to sponsor a research study to test the influence of three different wellness program treatments on the employees. The participants were divided into three treatment and two control groups. The theoretical application of having a wellness program is to increase physical fitness and job satisfaction while decreasing absenteeism. A practical application of this study is to consider a few different wellness program treatments to decide which one is the most effective (Pike 394).

The results showed significant reduction in absenteeism of 1.5 days per employee for the year measured in the three treatment groups compared with the two control groups. Improvements in job satisfaction, physical fitness, self-image, and lifestyle attitudes and practices were all significant in respective treatment groups compared with controls. Also, all groups demonstrated positive opinions

about the program regardless of their level of involvement. The significant results achieved suggest that the wellness interventions were effective in implementing fitness and job satisfaction and reducing absenteeism (394).

Westinghouse Electric Assembly Plant had experienced problems with cumulative trauma disorders and low-back pain because of the nature of their assembly positions. In response to this, they sponsored a research study, which measured the effects of a strength and flexibility program on preventing increases in these conditions. The results of the study indicate significant improvements in all flexibility measures and mood subscales such as fatigue, anger, and depression. The results of this study indicate that it may be possible to successfully integrate exercise into the daily work routine of employees with a favorable impact on preventive measures for cumulative trauma disorder and mood states while improving components of health-related physical fitness of the employee. A practical application of this study is to have strength and flexibility exercises at work for companies that have an assembly process that promotes certain conditions such as cumulative trauma disorder and lower back pain. Also, a company can give their office personnel information on how to avoid these conditions by working ergonomically correct (Pronk 175).

One of the research studies that was presented earlier, detailed the costs of implementing four different models of worksite wellness programs in four automobile manufacturing plants. It has been published in Personnel Psychology titled "The Cost-Effectiveness of Worksite Wellness Programs for Hypertension Control, Weight Loss, Smoking Cessation, and Exercise" by John C. Erfurt, Andrea Foote and Max A. Heirich. The data reported in this study on the

percentage of risks reduced/relapse prevented among employees who are hypertensive, smokers, ex-smokers, overweight, or needing regular exercise, show that the physical fitness facility model tested in Site B did not produce any better results than the comparison model, Site A (health education only) after a 3-year test period. Analyses that examined changes in each of the four risk factors separately found no improvement among hypertensive employees at either Site A or Site B in level of blood pressure control, and no weight loss among the overweight employees at either of those sites. Also found were a higher rate of relapse among smokers trying to quit at Sites A and B, as compared with Sites C and D. very low levels of participation in worksite weight-loss and smoking-cessation programs at Sites A and B, and a lower frequency of exercise at Sites A and B. Because results at Site B were actually worse than those at the comparison site, the Site B intervention was by far the least cost-effective of the three models being compared, in terms of its impact on targeted risks (22).

Like the health education model (Site A), the model employed at Site B is a passive type of wellness model, in which services are made available, but there is no effective outreach mechanism to draw the majority of employees to the facility and to keep them coming back. Attendants may sit in the fitness center waiting for people to come. Because evaluation procedures often rely on reports of numbers of users (or even number of times the facility is used, without distinguishing the actual numbers of people using it), this model often provides no feedback concerning the degree to which risks are being reduced. In this respect, the model is very like the health education model (Site A), which also does not normally collect outcome data on risks reduced or relapse prevented, so that

companies adopting the model cannot tell whether or not the program is effective. Data from this study indicate that a fitness facility that does not include systematic, persistent outreach to employees with health risks and routine long-term follow-up to assist them in making health improvements is not effective in reducing health risks (Erfurt 22).

The wellness design tested at Site D included plant organization as well as regular outreach and follow-up counseling. This model includes a formal fitness program with a wide variety of different exercise and fitness options that can be tailored to different employees, including the older and less energetic ones. Site D had the highest overall rate of employee participation in physical fitness activities, and at the end of the study, the highest percentage of the total workforce exercising three or more times a week (23).

Sites C and D, in addition to producing higher levels of participation in exercise programs, also produced higher levels of participation in blood pressure treatment (for hypertensive employees) and in worksite smoking cessation and weight loss programs (for smokers and the overweight, respectively). Of all the risk factors reported, only 12-18 percent of employees with each risk factor at Sites A and B took part in an risk reduction program for that risk factor, compared with 30-50 percent at Sites C and D. The incremental cost at Sites B, C, and D (beyond that achieved at Site A) which represented the cost of the three programs in relation to the program participation data was $3.60, $.36, and $.42 respectively per each additional percent participation (23).

The data does support the researchers' hypotheses that behavior change requires sustained support, encouragement, and assistance with problem-solving,

along with a variety of options for making changes which would result in lower health risks and higher cost-effectiveness. Any company that is contemplating starting a wellness program needs to look at research studies such as this one. It is evident from this study that for a wellness program to be effective in lowering health risks and getting the most return on their investment, they should have the following components: (a) wellness screening, (b) follow-up outreach and counseling, and (c) a menu of health improvement programs. Using company-wide organizational strategies such as health promotional events appears to improve the level of risk reduction achieved, but does not make as significant an impact, per dollar spent, as do the other components. Since the costs per employee would ordinarily be low, plant organization should be considered. Using these components would provide routine measurements of program outcomes and effectiveness. A practical application of this study is to develop a wellness program that includes wellness screening, follow-up outreach and counseling, and a variety of options to improve one's health (24).

Another research study that was presented earlier focused on evaluating Computerized Health Risk Appraisals (HRA). It was published in the American Journal of Health Promotion titled, "Efficacy of Computerized Health Risk Appraisals as Part of a Periodic Health Examination at the Worksite" by Donald H. Gemson and Richard P. Sloan. Data from this randomized trial indicate that computerized HRA contributed to health behavior change beyond that produced by a physician-based periodic examination among employees at a large financial services firm. The intervention group demonstrated a statistically significant improvement in computerized appraisal age and self-reported physical activity

and showed trends toward greater improvement in cholesterol level, blood pressure, weight loss, and seatbelt use in comparison with the control group. These findings provide support for the efficacy of HRA as part of a physician – based periodic health evaluation at the worksite.

The health improvements demonstrated by the HRA group in comparison to the control group were relatively modest. Because of the heavy burden of preventable disease in our society, however, even small reductions in major risk factors (e.g., cholesterol, weight, and sedentary lifestyle) may result in significant improvements in health for many people (Gemson 465).

Of particular interest was the findings that HRA participants with a computerized appraisal age higher than their actual age demonstrated greater improvement in risk factors than did control group participants with a computerized appraised age higher than their actual age. A theoretic explanation for this finding is consistent with the Health Belief Model. This model postulates that change in health behavior is a function of four dimensions: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers. In other words, to get individuals to change their health behaviors, they must perceive that they are susceptible to getting ill and/or injured, they must perceive that they can become severely ill and/or injured, they must perceive that they are able to significantly reduce the risk of becoming severely ill and/or injured, and become willing to address the factors that they perceive that would keep them from reducing their risks. Participants who were informed that their computerized appraised age exceeded their actual age may have developed a greater perceived susceptibility to an adverse health outcome that enhanced their motivation for

behavioral change. Although this explanation was not empirically tested (i.e., there were no direct questions of attitudinal change associated with HRA feedback), it provides a theoretic explanation for the greater improvement in behavioral risk factors among HRA participants with a high appraised age (465).

Appraising the health and identifying the risk factors of each employee is a logical beginning for any wellness program because all employees will not have the same health status and participate in the same behaviors that put them at risk. Therefore, individualized programs can be set up to address the particular risk factors that each employee has. Evidently, using a Computerized Health Risk Appraisal is a scientific and thorough method to achieve this. Also, when an individual knows what their health status, risk factors, computerized appraised age, and what behaviors need to be changed, they will more likely be motivated to make the necessary behavioral changes.

A critical aspect of any wellness program is getting participants to change certain unhealthy behaviors. Smoking tobacco is probably the most obvious example of this and one of the most important ones to address. Most employers have some form of a smoke-free policy. Some offer smoking cessation classes. Ideally, a company will have both in order to give employees that smoke both the motivation and help to quit smoking.

A significant research study concerning smoking, which was presented earlier, was published in the American Journal of Health Promotion titled "Evaluation of the 1990 Centers for Disease Control and Prevention Smoke-Free Policy," by Seth L. Emont. The purpose of this study was to determine the prevalence of tobacco use among Center for Disease Control and Prevention

(CDC)/Agency for Toxic Substances and Disease Registry (ATSDR) employees and the effect of the smoke-free policy on smoking behavior and air quality at work. The employee survey revealed that, overall, 90 percent of CDC/ATSDR employees supported the smoke-free policy; however, a greater percentage of former smokers and never smokers supported the policy than did current smokers. These findings are consistent with previous evaluations of smoke-free policies and suggest that most employees are generally supportive of workplace smoking restrictions. About 80 percent of those surveyed believe that smokers were complying with the smoke-free policy. However, nonsmokers were slightly less likely than smokers to report that smokers were complying with the policy. In addition, most respondents agreed that work and nonwork areas were either not very smoky or not smoky at all.

Although it is uncertain whether worksite smoking restrictions have a lasting impact on smoking behavior, recent studies have shown that smoking restrictions do have an impact on cigarette consumption. More than half of all current smokers reported a decrease in cigarette consumption during work hours as a result of the smoking policy. In addition, the smoke-free policy may have acted to motivate smokers to take action to quit. Indeed, about 25 percent of all smokers indicated that the smoke-free policy had an effect on their interest in quitting smoking, and about 50 percent of these smokers reported quitting for at least one day after institution of the smoke-free rule (Emont 459).

Ultimately, the goal of CDC/ATSDR was not just to eliminate smoking in the workplace, but to have their employees quit altogether. Therefore, the CDC Smoking Cessation Committee has drafted a proposal for a comprehensive

CDC/ATSDR employee smoking cessation program that will allow interested smokers to choose one of three options for stopping smoking. Theses options include self-help techniques, formal smoking cessation programs, and pharmacologic aids to quitting (i.e., nicotine gum or patch) (459).

Having a smoke-free policy at the workplace is healthy for smokers and nonsmokers alike and would decrease healthcare cost. However, the more restrictive the policy is, the more difficult it would be for smokers to comply. Therefore, the reasonable strategy for an organization to use is to help their employees that smoke to quit. The smoking policies that CDC/ATSDR have followed should be a model for other employers.

While helping employees to quit smoking is an important component of achieving good health, so is getting a sufficient amount of exercise. Therefore, most wellness programs stress physical fitness, give employees exercise goals to meet, and even have a fitness facility and/or exercise classes at the workplace. However, an employer needs to ask, "What does it take to get employees to achieve their exercise goals?" This is addressed in the research study published in Personnel Psychology titled "Promoting Regular Exercise in Organizational Fitness Programs: Health-Related Differences in Motivational Building Blocks" by David A. Harrison and Laurie Z. Liska. In this study, hypotheses were proposed about relations among "building block" components of the motivation to attain exercise goals in an organizational fitness program, as well as about health-related individual differences in those components.

In this study, the data did support the researchers' hypotheses: (a) In order to attain an exercise goal, there must first be a commitment to that goal, (b) In

order for one to be committed to an exercise goal, the perceived outcome must be attractive and be within the control of the individual to achieve, (c) Past health-related factors such as obesity, high blood pressure, frequent sick leave, smoking, etc. are positively related to perceived health-related and non health-related barriers to attaining fitness goals (Harrison 49). Unfortunately, what this implies is that those employees who need to participate in fitness programs most, are inclined to do it least. This is a very significant point because in order to achieve the goals of a wellness program in general, an employer must motivate the high-risk employees to participate in wellness activities such as exercise programs. Therefore, with this group of individuals, follow-up counseling and a reward system are particularly useful.

A principle contribution of this study is the demonstration that motivational principles applied in work performance contexts can also be applied in the context of organizational fitness programs. To motivate employees to reach an exercise goal, a fitness program manager must (a) try to strengthen the perceived link between goal attainment and positive outcomes (e.g., provide work-related rewards such as increased health insurance premium sharing), (b) weaken the perceived link between goal attainment and negative outcomes (e.g., arrange schedules so that employees need not ask co-workers to "cover for them"while they take part in organized exercise activities), (c) add positive outcomes to the perceived set of outcomes (e.g., praise and social recognition for Athenian the goal), and (d) remove negative outcomes from the perceived set (e.g., enforce a managerial support policy that would eliminate work "piling up" while the employee uses release time to exercise) (64).

One research study is significant because it showed an inexpensive way to lower absenteeism. It was published in the American Journal of Health Promotion titled "Comparison of Maternal Absenteeism and Infant Illness Rates Among Breast-feeding and Formula-feeding Women in Two Corporations" by Rona Cohen, Marsha B. Mrtek, and Robert G. Mrtek. In this study, a comparison was made between breast-feeding and formula-feeding among employed mothers. Absenteeism directly related to child care was examined.

This study shows that women who breast-feed their babies are less likely to be absent from work because of baby-related illnesses and less likely to have long absences when they do miss work compared with women who feed their infants formula. Preliminary evidence supports the assertion that activities such as corporate lactation programs can influence infant health by promoting and supporting breast-feeding continuation (Cohen 153).

By promoting breast-feeding and lactation programs, an employer would lower the costs of absenteeism. For example if a female employee who has an infant has a gross income of $100 per day and would have a sick day, due to her infant becoming sick, twice a month if the infant is formula-fed and only once a month if it is breast-fed, the employer would save at least $100 per month during that phase of the child's life. This is because the mother would get her pay anyway even though she is absent and not performing her work. The employer may also have to get a temporary worker who would not be nearly as productive as the regular employee would be.

The literature on wellness programs has shown a definite pattern of success in improving the health and well-being of employees and significantly

lowering health care cost. For example, just one instance of keeping someone from getting a heart attack, making adequate pre-natal care available for a pregnant woman, or detecting breast cancer early through mammography, can save a very large sum of money in health care costs. As stated in Chapter II, the John Alden Company saved $124,000 by detecting two employees' breast cancer early. This is just the savings on the treatment alone. Late detection would have cost the company even more in absences and possibly cost attributed to disability or death.

Improvement in health has shown to lead to an increase in employee morale and a decrease in absenteeism. Since employees who have improved their health are happier, they are less likely to leave their job and if they are less likely to become ill, they will be at work more often and be more productive. In some of the literature, representatives for some organizations have claimed a return of two, three, or more dollars for every dollar invested in their wellness program. These claims were interesting, but would be more meaningful if they would publish the details of their cost/benefit analysis. However, there have been very good scientific research studies on wellness programs that have been reviewed earlier, that show positive results.

Even though there have been many articles and studies published on wellness programs, there has not been anything published that develops a comprehensive consensus of the different theoretical and practical applications which have been used. This is what this research paper contributes to the study of wellness programs. If any company representative is considering proposing a wellness program for their organization, reading this research paper would be an

excellent starting point. It summarizes and analyzes much of the literature written on the subject, which would make it much more convenient to read than all of the articles individually.

Since the literature consistently shows that wellness programs meet their objectives, the hypothesis is accepted.

Limitations

There are some general limitations for this study. As stated before, some companies have claimed a return of two, three, or more dollars for every dollar invested in their wellness program. Unfortunately, there are no details published of their cost/benefit analysis. Also, since some studies shown earlier happened several years ago, the dollars involved would change over time. However, this would not significantly change the nature of the results.

There are specific limitations on some of the studies. For instance, the sampling on a few of the studies could be a problem. In the study published in Personnel Psychology titled "The Cost-Effectiveness of Worksite Wellness Programs for Hypertension Control, Weight Loss, Smoking Cessation, and Exercise" by John C. Erfurt, there were a few sampling problems. The populations screened were predominately male (83-89 percent). The results could be less meaningful for females. The results could have been broken down by race and age groups to see if there were any significant differences between these groups. There was also a few sampling problems in the study published in the American Journal of Health Promotion titled "Efficacy of Computerized Health Risk Appraisal as Part of a Periodic Health Examination at the Workplace" by

Donald H. Gemson and Richard P. Sloan. In this study, employees volunteered to participate in the it. Participants who self-select into worksite health promotion programs may differ significantly from the total employee population; data were not available in this study to compare participants and nonparticipants. This could be very significant if nearly all of the employees that did participate were considered low risk. This is because the major target of wellness programs are the high-risk employees. Also, in this study the number of participants was relatively small. The goal of sampling is to be able to generalize to other settings and populations.

Confidentiality is an important factor in getting honest information from participants in studies. Therefore, it is generally better to get input from participants through a written questionnaire where they know they identity will not be connected with their answers. In the study published the American Journal of Health Promotion titled "Evaluation of the 1990 Centers for Disease Control and Prevention Smoke-Free Policy" by Seth L. Emont, a telephone survey was used to ask employees about their tobacco use and attitudes toward tobacco use. Even though there are some advantages to using a telephone survey such as clarification and feedback, the researchers probably would have received more accurate information with a confidential written survey.

Suggestions for Future Research

Given the opportunity to replicate the study, there are a few changes that should be made. For example, it would be interesting to see, in future research, more study results broken out, at random, by gender, race, and age in order to

compare how a particular wellness plan would effect each group. This would show if there are significant differences between groups and to what extent the results can be generalized to other settings and populations.

Another issue is the lack of information that some companies have published concerning their wellness program. Some companies have stated that they have had positive results and an excellent return on their investment, but have not stated any cost-benefit analysis or scientific research to support these positive conclusions. It would be more meaningful if they would supply this information. Also, it would helpful if more studies had more tables and charts that are easy to read.

Long-term and replicated studies over time would be particularly useful in judging the affects of wellness programs. Most studies have been for six months to three years long. A long-term or replicated study would show whether individuals who lowered their blood pressure and cholesterol, lost weight, quit smoking, etc. after one year would have relapsed back to their original unhealthy state.

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