



The effectiveness of a faculty wellness program at Montana State University
by Ralph Allen Brigham

A thesis submitted in partial fulfillment of the requirements for the degree of Doctor of Education
Montana State University

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Abstract:

The problem of this study was to determine the effectiveness of a wellness program for full-time faculty and administrators at Montana State University. Those included in the study had participated in the wellness program for a minimum of three quarters since the program began in spring quarter, 1985. A key concept was that of a health age discrepancy, which is simply the difference between one's actual age and one's health equivalent age based on one's lifestyle assessment.

A two-way analysis of variance was used as the method for testing the significance of the following four hypotheses: (1) wellness participation and health age discrepancy by gender, (2) wellness participation and seat belt use by gender, (3) wellness participation and absenteeism by gender, and (4) wellness participation and health care claim costs by gender.

A chi-square test of independence was used to test the significance of the following two hypotheses: (1) that the use of tobacco was independent of participation in the wellness program, and (2) that the use of alcohol was independent of participation in the wellness program.

The conclusions of this study suggested that males, in both the wellness participant category and the non-participant category, possessed a higher, positive health age discrepancy than did females in both categories. Tobacco and alcohol were not important factors when describing differences between groups. Wellness participation did not affect the rate of absenteeism nor did it influence the rate of health care claim costs for either males or females.

Recommendations for further study include: (1) replication on other campuses, different in size and geographic location (an urban setting is needed), (2) reasons for participation in wellness programs need to be explored, (3) national causes of illness and death need to be investigated in comparison to on-campus causes, and (4) this cohort should be followed longitudinally over the next five years.

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AT MONTANA STATE UNIVERSITY

by

Ralph Allen Brigham

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APPROVAL

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This thesis has been read by each member of the thesis committee and has been found to be satisfactory regarding content, English usage, format, citations, bibliographic style, and consistency, and is ready for submission to the College of Graduate Studies.

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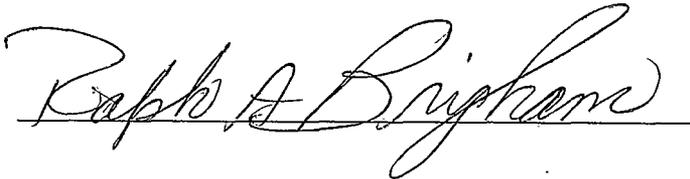
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ABSTRACT

The problem of this study was to determine the effectiveness of a wellness program for full-time faculty and administrators at Montana State University. Those included in the study had participated in the wellness program for a minimum of three quarters since the program began in spring quarter, 1985. A key concept was that of a health age discrepancy, which is simply the difference between one's actual age and one's health equivalent age based on one's lifestyle assessment.

A two-way analysis of variance was used as the method for testing the significance of the following four hypotheses: (1) wellness participation and health age discrepancy by gender, (2) wellness participation and seat belt use by gender, (3) wellness participation and absenteeism by gender, and (4) wellness participation and health care claim costs by gender.

A chi-square test of independence was used to test the significance of the following two hypotheses: (1) that the use of tobacco was independent of participation in the wellness program, and (2) that the use of alcohol was independent of participation in the wellness program.

The conclusions of this study suggested that males, in both the wellness participant category and the non-participant category, possessed a higher, positive health age discrepancy than did females in both categories. Tobacco and alcohol were not important factors when describing differences between groups. Wellness participation did not affect the rate of absenteeism nor did it influence the rate of health care claim costs for either males or females.

Recommendations for further study include: (1) replication on other campuses, different in size and geographic location (an urban setting is needed), (2) reasons for participation in wellness programs need to be explored, (3) national causes of illness and death need to be investigated in comparison to on-campus causes, and (4) this cohort should be followed longitudinally over the next five years.

CHAPTER 1

INTRODUCTION

Concern for the wellness of employees is on the increase in the workplaces of America. A major reason for this concern is the fast rising cost of employee health care. Higgins and Phillips (1979) estimated that premature employee death and employee illness and disability combine to cost companies approximately \$28 billion a year (p. 53). One leader in the wellness movement, Don Ardell (1984) reported that in 1977, United States' companies were paying an average of \$1,250 annually (including insurance) per employee for all health related costs, or a total of \$33 billion (p. 25). The U. S. Chamber of Commerce issued corresponding figures in 1983 of \$2,000 and \$78 billion, respectively. Opatz (1985) suggests that by the year 2000 we will be spending \$4,000 per person or one trillion dollars for our health care (p. 23).

These figures are one reason why industry has, over the past 5 years, devoted increased effort and money to developing employee wellness programs, which have been defined by Opatz (1985) as the

"process of adapting patterns of behavior that lead to improved health and life satisfaction" (p. 7).

The goals of wellness programs include: (1) developing a healthier lifestyle, (2) promoting a physiologically sound individual, and (3) reducing expenditures on illness related claims. Although many benefits of a wellness program are long-term and may not appear for up to 10 or 20 years, results of current research have indicated short-term (less than one year) benefits of healthier lifestyles and more physically fit individuals who have reduced illness expenditures (McMillen, 1986; Bernacki and Baun, 1984; Cox et al., 1981; Pauly et al., 1982).

Company sponsored physical fitness first surfaced in the literature when John H. Patterson, in the 1890's, instituted a physical fitness program at National Cash Register (National Cash Register, 1980). It consisted of daily 10 minute exercise breaks at 10:00 a.m. and also at 3:00 p.m. Patterson continued with his progressive idea for succeeding decades, but few others adopted his way of thinking. During the following half century interest in such programs languished.

The next significant event in the wellness movement came with the publication of Halbert L.

Dunn's High Level Wellness: An Alternative to Doctor's, Drugs, and Disease (1961). Although this publication laid the groundwork for professionals to pursue wellness in a more formal sense, it did not make a significant impact on the general public. Finally, over the past six years wellness programs have proliferated throughout corporate America and institutions of higher education are now beginning to adopt this movement.

Montana State University, in July, 1985, began contributing \$38.00 annually from each employee's health care premium to an "employee wellness program." Both the institution and its employees have invested resources (time, money, and effort) in this program in the belief that this investment will yield tangible benefits. These benefits can and should be measured both in terms of cost savings as well as the overall effectiveness of the program. The goals of the program are stated in Appendix A.

Statement of the Problem

The problem of this study was to determine the effectiveness of a wellness program for full-time faculty and administrators at Montana State University. Those included in the study had

participated in the wellness program for a minimum of three quarters since the program began in spring quarter, 1985. The study compared participants to non-participants on various physiological, lifestyle and economic components.

The Need for the Study

Several studies indicate that a wellness program can indeed reduce absenteeism, lower health claims, and achieve other results that more than justify the cost of the program. Further, virtually no studies on this topic have been conducted in terms of college and university employees, despite the fact that North American higher education is an 80 billion dollar, labor-intensive industry (The Condition of Education, 1984). Thus, it is important to determine carefully the effectiveness of a wellness program in a higher education setting. MSU's early progress in establishing a wellness program makes this study especially promising to everyone concerned with managing people and the costs associated with their working conditions.

The welfare of employees is important to all administrators within an institution of higher education. If employees' health risks can be

diminished, significant reductions in death and related disability, lost productivity, and cost for health care may be obtained. According to statistics cited by Thar (1984), "The nation's health bill consumed 10.8 percent of the gross national product (1983), or \$1,459 for each individual in the U. S." (p. i). In short, possibly the best defense against skyrocketing health care costs is to prevent illness. Opatz (1985) warned that "the current system is so ensconced (for-profit hospitals, medical schools, increasing illness identification technology) that the only long-term solution is to keep people away from it and thereby reduce its size and importance" (p. 31).

Studies in industry have shown the value of wellness programs within the workplace, but corresponding studies within the higher education sector are lacking. Current researchers have consistently stated the need for complete, well documented and well conducted studies (Fielding, 1982; Hoffman & Hobson, 1984; Metcalfe, 1985). The study of this innovative program at Montana State University hopes to document just how much influence, if any, a wellness program can have on changing the health habits of employees as evidenced through their

appraised age. Positive results could result in many institutions of higher education by moving from a passive to an active role in health care involvement through managerial participation and active intervention in employee health problems.

Questions That Were Answered

Three basic questions were addressed:

1. Can the health age discrepancy of participants in the wellness program, as measured by the Health Risk Appraisal be affected by participation in the wellness program?
2. Did participants have less absenteeism than non-participants?
3. Are health care claim costs for participants lower than for non-participants?

More specifically, participants and non-participants were compared in the following areas:

- I. Lifestyle factors
 - A. Appraised age
 - B. Tobacco usage
 - C. Alcohol usage
 - D. Seat belt usage

II. Economic criteria

A. Absenteeism

B. Medical claim costs

In general, is the program effective for controlling rising health care costs and can the program improve the general health of MSU employees?

General Procedure

All Montana State University employees and their spouses are eligible to participate in the wellness program. This retrospective study examined a select group of employees who have participated in the wellness program matched with employees who have not participated in any of the wellness activity programs.

In December, 1986, participants in the wellness program were asked to complete the Health Risk Appraisal (Appendix B) to collect certain physiological and lifestyle information and to calculate an appraised age. Ellis and Raines (1983) described an individual's appraised age as "the impact of an individual's behaviors on his or her life span (p. 31) and the result is an age that takes these health risk indicators into account. Risk age (Beery et al., 1981) has also been used for

describing life expectancy "being the age of an average person who has the same total risk of death."

From this group of participants, only those participants who have participated in a wellness class during a minimum of three quarters between September 1985 and December 1986 (five quarters) were used for the study. An element of commitment to wellness and physical activity was brought in to the study by making the three quarter minimum a requirement. An equal number of non-participating MSU employees were randomly selected to complete the same information once they met the matching pairs criteria. Medical claim and sick leave data will also be collected for these same individuals in both of these groups.

Delimitations of the Study

1. The study was delimited to on-campus full-time employees of Montana State University. The experimental group included those employees who participated in at least one wellness course per quarter for a minimum for three quarters between September, 1985 and December, 1986.

2. The Health Risk Appraisal was used to determine appraised age and gather lifestyle habit information.

Limitations of the Study

1. Self-selectivity was one limitation of this study, as it has been for most studies of this type (Haskell & Blair, 1980, p. 112). In the experimental group, only those individuals who chose to participate will be evaluated against the control groups. The control group was selected using a matched pairs methodology.
2. The time-span of the study may influence the results. Long-term benefits of this program may not appear for up to 10 or 20 years while short-term results may be misleading. For example, in a publication by the Office of Disease Prevention and Health Promotion (Worksite Health Promotion, n. d., p. 5), Blue Cross/Blue Shield of Indiana reported a significant increase in health care costs in the first two

years, since the program identified illnesses that previously went undetected. After the second year health care costs then began a downward trend. LaRosa, Haines & Kiefhaber (1985, p. 236) claimed that a minimum of five years of program intervention is needed for controlled hypertensive workers. Madeleine Udeleff (1985) contends that "some results don't become apparent for anything from a year to five years" (p. 39). On the other hand several studies have shown sizeable cost savings in less than a year (Bernacki and Baun, 1984; Cox et al., 1981; Pauly et al., 1982; Bowne et al., 1984; McMillan, 1986).

3. The review of literature was limited to research reports published between 1979 and 1986. It was further limited, in most cases, to research journals reporting on actual wellness programs and not the popular literature on wellness and levels of physical activity.

Definition of Terms

"Appraised age" is the sum of "the impact of an individual's behaviors on his or her life span (Ellis and Raines, 1983, p. 31) and the result is an age that takes these health risk indicators into account.

"Wellness" may be defined as an attitude, an approach to life, self, work, and even to the way one copes with illness or injury. It may best be described as the attempt to achieve optimal health.

A "wellness program" is a planned program that encourages employees to change their lifestyle to increase the level of their health. "Health promotion" is also used to describe wellness programs.

"Health risk factors" are behavioral factors that lead to disease. Examples of health risk factors include smoking, excessive use of alcohol, and level of physical fitness.

"Health care benefits" refer to the saving of lives, reduction in health care costs, reductions in insurance, and enhancement of the quality of life.

"Risk indicator" (Goetz et al. 1980, p. 122) is any factor with consequences for a health-related risk.

"Risk age" (Beery et al., 1981) has been used for describing life expectancy "being the age of an average person who has the same total risk of death".

The level of participation in a wellness program needs definition. "High adherence" in this case means 2 or more times per week. "Low adherence" means 1 time or less per week, but still involved in the program. "Dropout" refers to the individual who began the wellness program, but for whatever reason discontinued participation.

"Nonparticipant" is the employee who has never been involved in the wellness program.

"Health Age Discrepancy" is used to describe the difference between actual age and appraised age. If an individual is 32 years old and his appraised age is 26, the health age discrepancy would be +6 years. Similarly, if the same 32 year old male had an appraised age of 40, his health age discrepancy would be -8.

"Sick leave" includes all days absent from work due to illness or injury of the employee. It may also mean an employee needed to miss work to care for a member of his or her immediate family.

CHAPTER 2

REVIEW OF RELATED LITERATURE

The purpose of this chapter is to review the literature associated with wellness programs. Most of the research has been initiated and carried out by individuals involved in the corporate sector; therefore, the quantity of literature on college and university wellness programs is rather limited. This review of literature will provide a base from which to evaluate developments in wellness programs in both the corporate and higher education settings.

The review of related literature presented in this dissertation will be divided into three parts: (1) those statements that show the need for health promotion and cost containment in the workplace, (2) that literature which reveals the potential benefits of a wellness program, and (3) that literature which contains studies similar to this dissertation, whether in the corporate or higher education setting.

Rationale for Wellness Programs

Many different facts may be specified in the need for wellness programs in all types of work settings. The United States is experiencing an increasingly aging population, a population that is more stressed, less healthy, and dying of lifestyle causes rather than infectious and contagious diseases.

Pelletier (1979), in his book Holistic Medicine, describes four measures that he considers central to wellness or holistic, preventive medicine. These measures are "lifestyle change, and management of stress, diet, and exercise" (p. 64). These measures have been used as a basis for evaluating wellness programs, either in part or in total.

Infectious and contagious diseases as the leading cause of death have been replaced by life style factors (Weisensee & Ward, 1985 p. 9), such as heart disease, cancer, stroke, and accidents. The Department of Health, Education, and Welfare reported that the leading causes of death in the United States during 1975 were as listed in Table 1:

Table 1. Table from the Department of Health, Education and Welfare Showing the Leading Causes of Death in the United States.

<u>Cause of Death</u>	<u>Percentage of All Deaths</u>
1. Heart disease	37.8%
2. Cancer	19.3%
3. Stroke	10.3%
4. Accidents other than motor vehicle accidents	3.0%
5. Influenza and pneumonia	2.9%
6. Motor vehicle accidents	2.4%
7. Diabetes	1.9%
8. Cirrhosis of the liver	1.7%
9. Arteriosclerosis	1.5%
10. Suicide	1.4%

Since many of these causes of death are greatly affected by lifestyle, several lifestyle factors are usually addressed in a wellness program. Hettler (1980, p. 8), discusses the factors influencing lifestyle in relation to health. An overwhelming 53% of those factors relate to lifestyle factors which can be controlled by the individual. Only 16% of the factors are things that are beyond the individual's control such as genes and body makeup. The health care system accounts for 10% of the factors with environmentally caused factors completing this analysis with 21%.

U. S. Senator William S. Cohen recently proposed the Preventive Health Care Incentive Act which proposes to reduce the number of individuals

who turn to doctors for care. Cohen (1985) speaks very clearly and concisely about the problem.

The primary public health enemy of the 1980s is chronic, degenerative disease. Prevention of today's illness depends more upon the actions of the individual than the actions of the community. Many of our most serious health problems are directly related to unhealthy behaviors - smoking, overeating, lack of exercise, and abuse of drugs and alcohol. Today, more than ever, the way we die is directly related to the way we live (p. 213).

High blood pressure is a leading problem in health care. A Montana Study (Healthy Montanans, 1984) admitted that,

approximately 22% of adult Montanans reported they had been told they had high blood pressure. Of those persons who indicated they were hypertensive, 66.3% said they had been told more than once and 33.7% reported being told only once. Only 2.3% of Montanans have an uncontrolled hypertension problem. Untreated hypertension is the single largest contributor to stroke and a major contributor to heart disease and kidney failure (p. 5).

High blood pressure was often a tell-tale sign of excess stress within an individual reported Cooper and Melhuish (1984, p. 103) when they concluded that there are two different methods of internalizing stress between men and women. They disclosed that men tend to become physically ill when confronted with stress-related illness and women tend

to develop mental illness when faced with the same situation.

Cigarette smoking is another serious threat to good health in the state of Montana. Healthy Montanans (1984) warned that:

Cigarette smoking is the largest single preventable cause of illness and premature death in Montana. It is the major single cause of cancer morbidity and is a causal factor for coronary heart disease and arteriosclerotic peripheral vascular disease; is associated with increased risk of coronary heart disease; and is the most important cause of chronic obstructive lung disease. Cigarette smoking increases the risk of bladder, pancreatic, and renal cancer, and peptic ulcer disease. Maternal smoking during pregnancy causes: retarded fetal growth; and increased risk for spontaneous abortion, fetal death, and neonatal death; and possibly, slight impairment of growth and development during early childhood. In Montana, 29.3% of adults currently smoke cigarettes. Nearly 79% of those smokers smoke less than one pack a day, while 19% smoke one to two packs, and 2% smoke more than two packs a day (p. 59).

The Health Consequences of Smoking (1980), a document by the Surgeon General, reported that "cigarette smokers experience a 70 percent greater coronary heart disease death rate than do nonsmokers" (p. 7). All of the above-mentioned information clearly demonstrates that smoking is a grave health problem in the U. S. today.

Members of the Health Care Cost Containment

Advisory Council for the State of Montana (1986) published the following facts on tobacco:

Smokers are absent from work fifty percent more often than non-smokers; they also have twice as many job-related accidents. Their illnesses tend to be more serious; they have fifty percent more hospitalizations than non-smokers. It is estimated that each smoking employee costs his employer over \$4550 yearly in medical care costs, accidents, life insurance, disability benefits, absenteeism and lowered productivity (p. 3).

The abuse of alcohol is yet another proven problem for the people of Montana. Quoting again from Healthy Montanans (1984) the problem of alcohol is detailed below:

The abuse of alcohol and drugs is one of the state's most serious problems. It directly or indirectly involves almost every aspect of our physical, psychological, and social well-being. In 1983, cirrhosis, which is largely attributable to alcohol consumption, ranks as our 10th leading cause of death. Alcohol use is associated with cancer of the liver, pancreas, esophagus, and mouth. Alcohol consumption during pregnancy is associated with a wide range of possible harmful effects to the fetus -- decreased birth weight, spontaneous abortion, and physical defects (p. 64).

The concern regarding alcohol is quite prevalent in the circles of higher education. In 1984, Thoreson warned about the use of alcohol in higher education and the reluctance to confront

especially those professors at the senior-level. Thoreson charged that, "a common sight on the college campus is the friendly, harmless, 'in the sauce' former superstar" (p. 66). These academic "superstars" still have potential and cannot be left to waste, nor should the situation be allowed to happen in the first place.

Weight control is another area with which wellness programs have concern. Guidelines for proper weight standards are constantly changing, but, according to Dale Feuer (1985), associate editor of Training, 20% over ideal weight is a serious health threat" (p. 32). This component of wellness deals with both diet and exercise, and the planning and following of both programs in a responsible manner. Healthy Montanans (1984) stated that, "In 1982, 12% of the U. S. population was underweight and 21.1% were overweight. Of the overweight group, 23.4% were males and 20.3% were females" (p. 70).

Wellness Programs and Their Benefits

It is now appropriate to examine the potential benefits of wellness programs. Quality research demonstrating the effectiveness of employer-sponsored health promotion is rare. Most of the evidence about the success of wellness programs in

terms of providing a favorable return on investment is inconclusive. The key word when discussing the potential benefits of wellness programs is "potential". More well conducted and documented studies are needed before conclusive results can be stated about the actual benefits of wellness programs.

It is appropriate, nonetheless, to list potential benefits into the two categories. This breakdown was provided by Michael O'Donnell (Director of Health Promotion Services at San Jose Hospital and California representative to the American Association of Fitness Directors in Business and Industry) in the book Health Promotion in the Workplace which he co-authored with Thomas Ainsworth, M. D. (1984). The two categories of potential benefits are: improvement in productivity and reduction of benefit costs (pp. 11-13).

Improvement in Productivity

Reducing Absenteeism. Reductions in absenteeism may result from a decrease in the number of sick leaves or a decrease in the length of each sick leave taken. Schwartz (cited in Yeater, 1985) found that "absenteeism costs industry 95 million

lost hours per week, which is equivalent to 2.3% of total hours worked or \$7 billion a year" (p. 596).

Improving Morale. The morale of employees may be increased when the employer shows interest in providing more benefits for the employees. This increased morale can manifest itself in a greater desire on the part of the employee to perform better, to put in a full day's work, and to increase the quality of work produced.

Conserving Operating Costs. An enthusiastic and dedicated employee may be less inclined to waste institutional resources. Such behaviors can reduce operating costs.

Improving Ability to Perform. A healthier body has the potential to perform at a higher ability for a sustained period of time. Stress and worry may be reduced with a healthier body, again producing a worker more capable of performing with greater concentration and effectiveness.

Developing Higher Quality Staff. Healthier workers may perform more effectively and therefore be of more value to the institution. Employees in good health may use fewer sick days. Resignations,

transfers to other jobs and premature deaths may also be less frequent.

Reduction of Benefit Costs

Reducing Health Insurance Costs. Many company's health insurance program premiums are based on the use of medical services and subsequent claims to the insurance company. With more health conscientious employees utilizing medical services less often the insurance companies can then lessen the need to increase premiums at the previous rates or perhaps reduce the premiums.

Lowering Life Insurance costs. Currently, a number of life insurance companies reduce premiums for individuals practicing healthy life-styles. Generally, these are only for individual policy holders. This practice may be introduced into group situations.

It is only natural and appropriate that wellness programs are promoted in the workplace. U. S. Senator William Cohen (1985) gives the following reasons for that appropriateness:

- (1) Most employees go to the workplace regularly,
- (2) Workers are given support through their co-

workers,

- (3) Environmental support such as office smoking policies may assist workers,
- (4) Convenience of access to facilities and institutional wellness programs make participation more convenient (p. 215).

Wellness Programs and Current Research

As stated earlier, the most valuable research concerning wellness programs and their effectiveness and/or cost savings and benefits has been in the corporate sector. Even there, evidence is slim and often not well substantiated. Wellness programs are not all alike and the goals of wellness programs are not all the same. Some programs work toward the cessation of smoking, others look to reduce alcohol abuse. Still others try to curb health costs. Weight reduction is yet another goal. Increased productivity, better physical conditioning, reduced disability are further reasons that wellness programs have been established. Kirkpatrick (1985, p. 450) hinted that many corporations are investigating wellness programs because of the possibilities of enhancing the profit margin. Indeed, the profit motive may have been an initial

