4-1995

Personal Interviews vs. Awareness: A Health Promotion Program for Behavior Change

Elizabeth Klein
Western Michigan University, klein232@osu.edu

THE CARL AND WINIFRED LEE HONORS COLLEGE

CERTIFICATE OF ORAL EXAMINATION

Elizabeth Klein, having been admitted to the Carl and Winifred Lee Honors College in 1991, successfully presented the Lee Honors College Thesis on April 1995.

The title of the paper is:

"Personal Interviewing with Follow-up vs. Awareness: A Worksite Health Promotion Program for Behavior Change"

Dr. Robert Bensley
Health, Physical Education and Recreation

Dr. Marianne Frauenknecht
Health, Physical Education and Recreation

Ms. Jan Covert

Personal Interviews vs. Awareness: A Health Promotion Program for Behavior Change

by

Elizabeth Klein

Table of Contents

Chapter One

Introduction

In the United States, heart disease is currently the number one cause of death in the adult population (U.S. Department of Health and Human Services, 1991). Unlike many of the major causes of death, heart disease is largely preventable through changes in health related behaviors. Although a portion of heart disease risk is attributed to genetics, the primary cause of heart disease development lies in the eating habits, exercise behaviors, and smoking habits of the individual.

Over the past 15 years, the prevalence of heart disease in the general population has been greatly reduced due to behavior changes associated with the risk factors to the disease (Erfurt, Foote, Heirich, & Gregg, 1990). Yet, even with successful decreases in the overall number of heart disease patients, this disease still resides at the top of the list of causes of death for adults. Without effective interventions to change risk behaviors, the number of North Americans predicted to develop heart disease by the year 2015 is 12.6 million (USDHHS, 1994). The 1990 estimated costs of coronary heart disease (CHD) was $94.5 billion for medical care and lost productivity due to disability (Chenowith, 1991). This figure reflects a modest estimate for the current costs for CHD in the U.S. as more cases have developed since 1990.

Health promotion programs are effective in changing behaviors that are related to health risks. This success has been proven through various programs in the worksite, community, and other

settings. Programs that involve the promotion of health and health awareness demonstrate that an individual who becomes aware of a health problem or risk has increased likelihood of adopting a more healthy behavior.

The idea of promotion of health in the worksite is not a recent phenomenon. As early as the 1970's, American businesses first identified health promotion as a viable option for their environment. The purpose of these programs was to fight the dramatic increase in costs that both were pushed on the employees of various companies and also placed a financial strain on employers (Lovato, Green, & Stainbrook, 1994). As the costs for sick time and hospital services increased dramatically, each has been indicated as contributors to these financial problems. Since that time, health promotion programs have aimed to prevent disease with the ultimate goal of cost containment.

Worksite health promotion programming aims to improve a person's health through disease prevention, health enhancement, and medical care (Chenowith, 1991). Major issues in providing worksite programs usually involve absenteeism, health insurance premiums, productivity, and employee health status issues. This combination of elements assists companies in containing the rising cost of employee health benefits, with health care cost inflation rising twice as fast as general inflation.

When the U.S. Public Health Service (PHS) developed Health Objectives for 1990, epidemiological criteria was used in order to determine the health goals for the general population (USDHHS, 1980). Based on the health promotion programs were deemed

effective in changing and reducing risky health behaviors, the PHS determined which types of programs to include in this document. Within those objectives, areas of high priority were defined to include diet and nutrition, physical fitness, hypertension, and various other risk factors of heart disease (Lovato, et al., 1986). In 1991, the updated version entitled Healthy People 2000 contained more specified priority areas identified to include a dramatic increase in the number of worksites offering health promotion programs. Not only did Healthy People 2000 set national priorities, but it modeled programs for the state and local governments as well as for the private sector businesses. Furthermore, this document emphasized the importance of health issues as a community-wide effort.

Coronary Heart Disease Risk Factors

Heart disease is a general term that describes a variety of illnesses that negatively impact the cardiovascular system, primarily the heart. The term coronary heart disease will be used throughout this document as an all-encompassing term for heart disease. This term covers the scope of the specific heart conditions or other disorders involved in this problem area.

Risk factors of CHD have been indicated through extensive research studies. Over the past 25 years, medical studies have been performed to determine which elements, or risk factors, can be effective in increasing an individual's chances of developing heart disease. As a result of this exhaustive research, five main preventable risk factors have been identified: smoking habits, blood pressure, cholesterol, body weight, and exercise behaviors (Gormel, Oldenburg, Simpson, & Owen, 1993).

Although each risk factor is described independently, combinations of risk factors have been shown to dramatically increase an individual's risk of heart disease (Slyper & Schectman, 1994).

Smoking

Cigarette smoking presents the most significant risk factor for development of preventable CHD. The damage of a cigarette stems from the constriction of the vascular system by the inhalation of smoking into the lungs. After each cigarette smoked, the blood vessels remain constricted, requiring more effort and work to move blood through the body system. Over a long term, blood vessels will suffer excessive work and premature damage, which allows many of the CHD problems to begin (The Wellness Encyclopedia, 1991).

Smokers have a 70% greater overall mortality rate for disease than do nonsmokers (Lovato, et al., 1986). Results from the Framingham study indicated that smoking only one pack of cigarettes a day almost doubled the incidence of CHD (Krepostan & Borzak, 1993). Cigarette smoking was also found to be responsible for 50% of all deaths due to CHD, especially for women in the development of specific coronary artery disease (Krepostan & Borzak, 1993).

The PHS found that 19% of total deaths, or approximately 400,000 annually, were caused by tobacco (USDHHS, 1994). In a longitudinal study of female nurses, one third of the excess risk of CHD was eliminated within 2 years of cessation of smoking (Kawachi, Colditz, Stampfer, Willett, Mason, Rosner, Speizer, & Hennekens, 1994). This study exemplifies the health benefits reaped by ceasing

to smoke and the ability of the body to partially repair itself once smoking habits are extinguished. As the time after quitting increases, the body will regain many health factors, especially for longer time period.

Blood Pressure

Hypertension has been suggested as a strong predictor of CHD. Although blood pressure fluctuates daily, over time an elevated blood pressure can result in harmful damage to the arteries and heart. All levels of hypertension are associated with an increased risk of cardiovascular events and stroke (Vidt, 1993).

Blood pressure, as a risk for heart disease, provides a difficult problem as elevated levels are not symptomatic, hence the designation as the "silent killer." This title refers to the fact that elevated levels of blood pressure are not indicated by any symptoms. As a risk factor to CHD, hypertension can only be detected by having blood pressure levels measured.

Systolic blood pressure involves the pressure of blood against artery walls during heart contractions while the diastolic blood pressure describes the pressure during heart refilling with blood between contractions. A strong linear relationship appears to exist between elevated diastolic levels and CHD (Krepostan & Borzak, 1993). This relationship indicates that as the diastolic levels of blood pressure increase, the risk to CHD increases equally.

Further studies have indicated that even slight reductions in blood pressure levels have a significant impact on risks for CHD. One study found that a reduction of 1 millimeter of mercury in the

diastolic blood pressure resulted in a 2-3% decrease in the risk of developing CHD (USDHHS, 1994). Additionally, individuals with elevated diastolic levels encountered more heart problems than individual with normal diastolic levels. Increased coronary mortality was demonstrated for patients with diastolic levels above 94 millimeters of mercury (Slyper & Schectman, 1994).

The recommended hierarchy of blood pressure risks vary for adults, depending on the source. Most reliably, there are three main category ranges for blood pressures: normal, borderline, and high. For the average adult, a measurement of 130/80 or below indicates a normal range. Borderline ranges occur when the pressures increase to 132/82, or any diastolic reading over 88. High ranges begin when the systolic measurements are greater than 140, or diastolic measurements are greater than 92 (Vidt, 1993).

Cholesterol

Blood cholesterol has become a popular measurement in recent years. The general public has been informed of the dangers of high cholesterol and its sources through the media.

One of the earliest findings in the Framingham studies described a relationship between total serum cholesterol and CHD (Krepostan & Borzak, 1993). Cholesterol adversely affects the body by providing deposits that harden and calcify on the blood vessels. This mass of excess body cholesterol, called atherosclerotic plaque, slows blood movement throughout the body. When the plaque becomes thick enough, blood movement can stop, causing a cardiac arrest. The source for this plaque may be sometimes be traced to a genetic tendency to overproduce cholesterol. Another possible

source of plaque results from excessive ingestion of animal products that contain cholesterol that adheres to weaknesses in the artery wall (The Wellness Encyclopedia, 1991).

Cholesterol levels are measured through the amount found traveling in the blood stream. Although the body requires a certain amount of cholesterol for survival, excess levels can be harmful. There are two main types of cholesterol that make up a total serum cholesterol level. First, the high density lipoprotein (HDL) travels to the liver for metabolism and removal from the body. The second type of lipoprotein is low density (LDL). LDL cholesterol provides the most damage as it attaches to the walls of arteries when at higher than essential levels for the body to use. Recommendations for total cholesterol level to equal 200 or below for healthy levels measured in the blood stream (The Wellness Encyclopedia, 1991).

The proportion of the population with elevated blood cholesterol levels is currently at 20% (USDHHS, 1994). Overall cholesterol reduction for patients with more than one risk factor can provide some levels of protection from CHD (Krepostan & Borzak, 1993).

BMI

BMI indicates the level of excess mass a individual carries on the body frame. This measurement correlates height and weight into a formula to indicate the levels of increased risk. For a healthy range, BMI should fall between 20 and 26 (The Wellness Encyclopedia, 1991). As the level of BMI increase, the risk of developing CHD increases dramatically.

A significant Japanese study on obesity followed 8,006 men in a 20-year study. Results indicated that as BMI increased, the risk to CHD increased (Curb & Marcus, 1991). This study indicated as well that higher levels of BMI were more dangerous than slightly above accepted levels.

The distribution of body adiposity, or body fatness, also comes into play for heart disease. As early as the 1950's, patterns of upper body fatness indicated an elevated risk for CHD. Often this pattern adiposity was located in the abdomen, shoulders, and nape of the neck, which was more often found in males (Slyper & Schectman, 1994). This body type has been characterized as the "apple" shape, and indicated as at higher risk for CHD. A correlation between the BMI level and total serum cholesterol levels confirmed the increased risk for all weight levels (Slyper & Schectman, 1994). This evidence provides additional incentive in the reducting of body mass for overall risk and the parallel risk of elevated cholesterol levels.

Exercise

The American Heart Association characterized the essential importance of exercise and heart disease with a statement that "physical inactivity is as great a risk factor for cardiovascular diseases as smoking or high blood cholesterol levels" (Culhane, 1993, p. 5). As in previous sections, both smoking and blood cholesterol levels have been indicated through research studies as negatively impacting cardiovascular health, and increasing risks for CHD.

Many studies have indicated the role of aerobic exercise in increasing cardiac efficiency and reduced cardiovascular risk profiles

(Lovato, et al., 1986). The benefits of exercise dramatically enhance the health status of the heart and entire cardiovascular system. Specifically, exercise reduces fibrinogen levels, blood viscosity, blood pressure, and levels of LDL cholesterol, while it increases HDL cholesterol (Krepostan & Borzak, 1993). By reducing the thickness and pressure of blood, the blood vessels have less difficulty providing nourishment to the body through the delivery of blood and oxygen.

Exercise has both rehabilitative and preventive purposes. In a study of 36 well conditioned men with heart conditions, regular strenuous exercise reduced CHD damage (Ciampricotti, Deckers, Taverne, el-Gamal, Relik VanWely, & Pool, 1994). Other documentation states that individuals recovering from CHD associated heart traumas have recovered more successfully with exercises used in rehabilitation.

With regard to long term weight loss, exercise is a crucial element. Physically active individuals are more successful at maintaining weight loss than those who are not physically active (Lovato, et al., 1986). Further, a consistent exercise regimen produces a reliable and measurable effect of weight loss. Exercise allows for the prevention of relapse and allows for weight loss maintenance over long term periods.

Behavior Change Modalities

Research conducted on health promotion programming over the past two decades has determined that health promotion programs are effective in changing health related behaviors. Differences in the level of effectiveness achieved through a program depends on the

behavior change strategy, or intervention used. For example, notable improvements in outcomes have been associated with providing programming in the most easily accessible location - the worksite. By removing programs from the health care setting, the convenience and accessibility for a population of an organization is increased. Further, successes have resulted from implementing proactive strategies for outreach to the at-risk groups, along with follow-up to assist and support new healthy behaviors (Erfurt, et al., 1990).

The setting of a program remains a crucial element of meeting the unique needs of a each worksite population. Although worksite health promotion programs for employees in business and industry have become widespread, programs for educators are not widely available (Blair, Tritsch, & Kutsch, 1987). In a quasi-experimental designed program from the Institute for Aerobics Research, 68% of educators reported healthy dietary changes, while 49% reported lifestyle improvements. As this study's conclusion indicated, "health promotion is feasible in a school setting, and significant and important changes occur in teachers exposed to health promotion programs" (Blair, et al., 1987, p. 470).

Based on the indicated research, the school as a worksite requires health promotion programming. In order to meet the health needs of this population, adaptations from original worksite program in a large manufacturing facility have been made to apply to the school setting for the following program.

In consideration of the types of programs to implement, it is imperative to evaluate the spectrum of programs available for the worksite. To describe the range of program models, one group of

researchers used each intervention strategy and format into a worksite population program. Specifically, a research project completed over a three year intervention study tested four different modes of health promotion for the worksite: (a) medical, (b) health education, (c) risk reduction, and (d) full-service site (Erfurt, et al., 1990). The medical model represents the traditional approach to health issues as advising employees with problematic health conditions to seek medical treatment. Within this model, no follow-up support is offered. The health education model focuses media strategies to encourage participation in health education classes offered by the worksite. As a primary goal, this program format attempts to raise awareness levels in order to stimulate at-risk individuals to utilize risk reduction services and eventually improve health conditions. The risk reduction model involves assistance on awareness, support, and follow-up for health issues. For this model, personal contact and follow-up provides participants with opportunities for increased awareness and education. The full-service site provides the combination of both the health education and risk reduction models. This model additionally develops health building behaviors and health risk elimination.

These four models describe the main program formats utilized most successfully for worksites. For some sites, more than one approach to programming is attempted. Other worksites may combine different formats to achieve programming goals. Due to the lack of research available regarding other formats or combinations, the discussion will be limited to these four models.

Within the current literature regarding health promotion programs, many studies emphasize one-on-one interactions between participants and wellness counselors as a critical element to successful worksite health promotion programs. Based on the work by Erfurt and others, studies have confirmed the success rates of such personal interactions. In an Australian study, researchers found that one-on-one programming yielded better success rates in the general population than the previously used health problem screening and risk factor education (Gormel, et al., 1993). From the study by Erfurt and his colleagues previously mentioned, one worksite resulted in over 50% of those overweight and almost 50% of smokers engaged in a weight loss or smoking cessation activity as a result of one-on-one interactions (Erfurt, et al., 1990). In a similar study with hypertension control at the worksite, treatment attrition rates were found to be problematic in those sites that did not include follow-up counseling interactions (Gregg, Foote, Erfurt, & Heirich, 1990). Further, the same hypertension study found that the ongoing counseling resulted in increased maintenance of health behaviors over the long term (Gregg, et al., 1990). From these studies, the successful use of one-on-one approaches and follow-up interventions can be seen.

Although the personal approach has resulted in great success in worksite health promotion, many organizations do not have the budgetary resources to support such a program. The economic costs of a part-time or full-time wellness counselor may not be feasible for many organizations. Fortunately, long-term savings can be achieved after beginning such a wellness program through insurance

premiums, worker's compensation, and other health care costs paid by the employer. One example of an extremely cost effective and beneficial program is the Live for Life program at Johnson & Johnson. From a long term evaluation of the effectiveness of the Live for Life program, the benefit to cost ratio for this program was found to be 1.7 to 1.0 (Lovato, et al., 1994). Obviously, this program has paid for itself along with profits for the company as well.

Statement of Purpose

The purpose of this study was to compare the effectiveness of a one-on-one interaction with follow-up CHD risk reduction approach with a health risk awareness education approach. It was hypothesized that the one-on-one interactions with follow-up will provide significantly greater reduction in CHD risk than the health risk awareness education. The null hypothesis states that there will be no difference between these two groups.

This study is delimited to a midwestern United States middle school faculty population, consisting of 75% female and 25% male. As with all research, delimitations and limitations exist. As a worksite, the geography of this location may not be limited in national application.

There are potential confounders in this study that could negate the study results. First, the selection of the participants was not randomly chosen from a large population but rather a group of volunteers from a smaller population. Second, outside factors may positively or negatively impact the changes made by the participants. Third, the motivation for volunteering for the program may be variable for each individual participant. Fourth, no

psychometric testing of the data collection instrument has previously been conducted to increase the reliability and validity of the questionnaire. Fifth, paricipants may be racially and socio-economically atypical, compared to the general population.

Chapter Two

Methods

At Marshall Middle School, subjects were selected through voluntary measures. A 10 minute presentation at a monthly faculty meeting provided explanation, a cover letter with consent form, and question and answers regarding the program structure. Based on that meeting and subsequent follow-up, approximately 40 faculty members were invited to participate in this program. No subjects were turned down before or after testing procedures began.

Volunteers received written notice of the dates, times, and location of the initial pre-testing. Screening times were offered during planning periods and lunch hours to accommodate various teaching schedules.

In grouping participants, names were drawn randomly for the intervention groups. The assigned number for each group was determined by splitting the entire group in two sections, with a sample size equaling 24.

Instrumentation

The data collection instrument used in this study was developed based on a health risk assessment questionnaire used by the exercise programs at Western Michigan University. Two items were selected dealing with smoking and exercise, and a third

measurement involved a blood pressure reading. The blood pressure ranges were adapted from Sindecuse Health Center recommendations for normal, high normal, borderline, and high adults readings. A fourth measure involved a measured weight and reported height for participants. The formula for BMI was taken from the Wellness Encyclopedia [weight in kilograms over height in meters squared.] Although cholesterol levels have been identified as significant to heart disease risk, the additional cost of completing blood work was not feasible to be included in this research. The remaining four factors have demonstrated connection to heart disease regardless of the use of cholesterol levels.

To determine a ranking system for risk factors, each of the four risk factors were weighted equally with regard to contribution to CHD. A scale was created which was to assess the sum of each of the risk factors measured. Although research data indicated that individuals with multiple risk factors may be at higher risk for CHD, no combination of multiple risk factors was created on this scale. (See Table 1)

The overall risk to CHD was scaled on a base of 0 to 100, from lowest risk to highest risk. Each individual risk factor had a low score of 0 and high of 25. Individual question responses and overall ranges for the scale were categorized as low, low to moderate, moderate, moderate to high, and high. The individual risk number assignments for each question were based on a scale of a most healthy activity providing the least heart disease risk (designation of zero) and so forth, based on the indications from research data. (See Table 2)

The selection of these numbers was based on the amount of participation in each of the activities. Depending on the activity, the amount of risk was determined then assigned a point value depending on the lowest to highest contribution to heart disease.

Table 1

Overall risk level	Range of scores
Low	0-20
Low to moderate	21-30
Moderate	31-40
Moderate to high	41-50
High	50 or greater

Table 2

Response rank	Response score
Low	0
Low to moderate	5
Moderate	10
Moderate to high	15
High	25

At the pre-testing, participants had blood pressure and weight measurements taken. A calibrated scale was used for testing. A sphygmomanometer provided by the Sindecuse Health center was used for blood pressure measurement. Two multiple choice

questions were answered on the questionnaire sheet for the exercise and smoking items.

Procedures

Pre-test measurements were taken over two consecutive visits. Each measurement visit covered approximately two to four hours during the 8:00 to 2:35 school day schedule. Because lunch hour and planning period times varied for the teachers, attempts were made to accommodate both the morning and afternoon schedules.

The locations for testing were in a semi-private area used for special classes or events. This room was available by reservation, allowing time blocks to be made in advance. The building housing this room was located adjacent to the middle school, within a short walking distance across the parking lot.

Once pre-testing was completed, a health status report for each individual was generated. This report included measurements and interpretation regarding the four risk factors and overall results. Reports were tailored to the individual needs of each participant.

For both intervention groups, health promotion materials (booklets, brochures, and a calorie counter) were included with the health status report. Reports were placed in school mail in an identified, sealed envelope.

For the one-on-one group, a follow-up counseling session for each member was set to review the health status report. All information and health promotion materials were available for participants to select. A personal goal was set by each participant

based on the health status report. Recommendations were made to choose a reasonable, achievable goal for the six-month program. Individual goals were noted in each participant's file.

Midway through the program, the one-on-one group received a follow-up letter reminding them of the program and the set goals.

For the posttesting, three follow-up visits were consecutively scheduled over 2 to 4 hour periods. Participants were given reminders through the daily announcements and through written notes. Testing was performed at the same location as the pre-test.

Health status reports were generated to include the post-testing measurements in comparison with the initial results. An overall health risk change was provided. Interpretation was given to participants in the reports. Reports were provided to the school mail boxes in identified, sealed envelopes. An evaluation form was included to provide feedback and suggestions regarding future programming.

Data Analysis

Data was analyzed utilizing the Statistical Package for the Social Sciences (SPSS). Group changes in risk behavior were analyzed using the t-test for statistical comparison of the means.

Chapter Three

Results

The purpose of this study was to compre the effectiveness of a one-on-one interaction with follow-up CHD risk reducation approach with a health risk awareness eduacation approach.

Descriptive Statistics

The sample initially consisted of 24 participants (6 males and 18 females.) A loss of six participants by the final measurements reduced the total to 18 participants (4 males and 14 females) completing the pre-test and posttest. Initially, the health awareness group had 14 and one-on-one group had 10 participants in each. For the final totals, the health awareness group included 14, while the one-on-one group had four participants. The mean overall health risk score for the health awareness group was 30.28, while the one-on-one group had a mean value of 31.67 at program end. For the change in behaviors from pre-test to posttest, the mean was .71 point change for the health awareness group. For the one-on-one group, the mean change from pre-test to post-test was 3.75.

Validity and Reliability

Consideration must be made for the face validity of the high correlation of these four factors to CHD and the tremendous research

base for this data. Due to the pilot nature of this project, no validity measures were conducted.

Reliability in this study is limited by the use of single measurements. Thus, no psychometric testing for reliability was conducted. However, reliability of the measurements was increased through use of a certified blood pressure screener for blood pressure measurements and a calibrated scale for weight measurements.

Statistical Analysis

The t-test comparison of means indicated whether a difference existed between the one-on-one and health awareness groups. To yield statistical significance, a value of p=.05 must be attained. Although a difference in program effectiveness was observed, it was not signficant (p=.45). Relating to the null hypothesis, this study failed to reject the null hypothesis.

Table 3

Variable	Number of cases	Mean	Standard Deviation	Std Error
Riskchng				
Group 1	14	.7143	7.559	2.020
Group 2	4	3.7500	2.500	1.250

		Pooled Variance Estimate			Separate Variance Estimate		
F value	2-tail Prob.	t value	Degrees of freedom	2-tail Prob.	t value	Degrees of freedom	2-tail Prob.
9.14	.094	-.78	16	.449	-1.28	15.20	.220

Chapter 4

Discussion

Data from this study provides some information regarding the implications of the method of behavior change selected for the worksite health promotion programs. A one-on-one interaction approach was compared to a more traditional health education format for worksite health promotion. The underlying theory of the more interactive program stated that with more personal attention followed more positive changes in health risk behaviors. The purpose of this study was to show a higher degree of behavior change within a health promotion program involving one-on-one counseling and health education programming.

Conclusions

From the research conducted, the principle findings indicate failure to reject the null hypothesis. Thus results indicate that a health promotion program that involves one-on-one interactions and follow-up does not necessarily differ from the rates of behavior change for a traditional health education worksite program.

Limitations to Interpretations

There are limitations that dictate the boundaries of interpretation of this study to a more broad application. First, the size of the population for the selection of participants did not meet

the minimums needed for sufficient power for this research study. Second, the attrition, or drop out rate for this group was very high, especially for the one-on-one counseling group. Third, the difficulty in initiating and follow-up with participants became problematic because the researcher was off-site. Fourth, some items from the questionnaire instrument were self-reported. By having participants provide such information, the honesty and accuracy of responses can be variable. Fifth, since the sample selection of participants was voluntary, a non-randomized selection process was used. Sixth, no psychometric testing for validity and reliability was conducted.

Implications

Based on the completed research, there are certain implications that can be made. First, worksite health promotion programs using a behavior counselor may not be significant over provided awareness information. Yet, this assumption is made without the consideration of the limitations of this study. Therefore, other research must be considered before this determination can be accurately made. This program does help further understand the differences between these two types of programs.

Although this study indicates the contrary, more extensive and long-term research supporting the theory of one-on-one counseling has been studied by Erfurt and colleagues (1991). The modes of behavior change provided by these studies supply ample description of completed research at a higher level of involvement for participants.

By using a program model based on a manufacturing setting, the Erfurt and collegues model has critical differences from a school

worksite setting. Through adaptations from this program, some of the unique characteristics of the school site may have interfered with the results of this study. These differences, such as scheduling flexibility, utilization of available time periods for meetings, daily hours, and physical environment for the school site may have unique characteristics that were not considered in the program.

Recommendations

For further study, a variety of recommendations can be made. To begin, a larger size of population will allow for a greater number of sample participants. Establishing a wider population group can draw on greater numbers of program participants.

Second, the wellness counselor should be available at the site or in the community. By providing health promotion assistance and programming from an on-site facility allows for more extensive contact with the sample group. Contact initiated by the participants can more easily be supported, and more accessibility for the population is achieved.

In order for long-term behavior change to be noted, and to be supported, a study should extend a minimum of six months. Providing programming for extended periods of time will allow for more extensive and accurate description of the measurable changes in behavior over that time period.

Fourth, an evaluation of health risk to heart disease that includes other variables can encompass a more comprehensive description of risks to heart disease. As a top priority, cholesterol testing should be provided in the analysis of risk to disease development.

Fifth, the unqiue characteristics of the school setting were not explored in this study. Further research on the barriers and unique needs of a school faculty as a worksite population need to discussed.

Sixth, a replication of the study by Erfurt and colleagues should follow the awareness model with more personal follow-up contact. As suggested earlier, on-site personnel could provide more frequency contact with participants, as well as longer periods of contact with the groups.

Seveth, exploration of the causes of the atrition rates for the one-on-one intervention group would be appropriate. One possibility may be allowing groups to individually select the type of format most appropriate for their needs.

As a final recommendation, a more comprehensive study can include one-on-one counseling, health education awareness, and other interventions. By incorporating various other interventions, more versatile applications to populations can be inferred from the research. Also, applying other strategies than those involved within this study may more effectively support the risk factor education regarding heart disease.

These five elements can expand this research program to a more comprehensive heart disease reduction format. By using these adaptations, more statistical support can be created, allowing for more conclusive results regarding the differences in program formats and behavior change.

Appendix A

Name: ______________________________________

Home phone number: ____________________________

****
*Please answer the following questions. **All information** will be kept confidential.*
****

1. On the average week, I participate in aerobic exercise (such as walking, swimming, biking, etc) for at least 20 minutes...
   a) at least 5 times per week.
   b) between 3 and 4 times per week.
   c) between 1 and 2 times per week.
   d) less than once per week.

2. Define your current smoking behavior:
   a) I have never smoked.
   b) I quit smoking cigarettes more than 1 year ago, OR smoke cigar or pipe now.
   c) I quit smoking less than 1 year ago OR now smoke less than 10 cigarettes per day.
   d) I smoke between 11 and 20 cigarettes per day.
   e) I smoke at least 21 or more cigarettes per day.

Height:____________________

Weight:____________________

Blood Pressure:________________________

!!
THANK YOU FOR YOUR PARTICIPATION!

<u>You can expect to receive your individual results of health risk to heart disease within the next two weeks!</u>

Appendix B

Western Michigan University
Department of Health, Physical Education, and Recreation
Student investigator: Elizabeth Klein Advisor: Dr. Robert Bensley

---

I have been invited to participate in a research project entitled "Personal interviewing with follow-up versus awareness: A worksite health promotion program for behavior change." I understand that this research is to compare the degree of behavior change in a health promotion program that provides health related information with a program that provides information in a personal interview that includes follow-up interviews. I further understand that this is Elizabeth Klein's undergraduate thesis project.

My consent to participate indicates that I will be willing to have my blood pressure, height, and weight measured, and will provide information about my smoking and exercise behaviors at the beginning and the end of this program on two separate, specified dates. I understand that I may be asked to meet with Elizabeth Klein for 30 to 60 minutes on one occasion during the project. I understand that I may be contacted by telephone by Elizabeth Klein to discuss my individual program. I understand that the program will run from September 1994 through January 1995.

As in all research, there may be unforeseen risks to the participants. If an accidental injury occurs, appropriate emergency measures will be taken; however, no compensation or treatment will be made available to me except as otherwise specified in this consent form. I understand that the potential risk of this program is that I may be upset by the results of my health status. I understand that it is my duty to contact my physician for specific medical advisement. I understand that I can benefit by receiving free health information and references, plus receiving written information on my current status.

I understand that all information collected from me will be confidential. That means that my name will not appear on any papers where this information is recorded. The forms will all be coded, and once all data has been collected, the forms will be destroyed. I understand that a group summary with all names withheld will be provided to Marshall Public Schools to review.

I understand that I may refuse to participate or quit at any time during the study without prejudice or penalty. If I have questions concerning this study, I can contact Elizabeth Klein at (616) 349-1477 or Dr. Robert Bensley at (616) 387-3081. I may also contact the Human Subjects Institutional Review Board at (616) 387-2389 or the Vice President for Research at (616) 387-8298 if questions or problems arise during the course of this study. My signature below indicates that I understand the purpose and requirements of the study and that I agree to participate.

_____ _____

Signature Date

References:

Berkeley Wellness Letter (eds.). The Wellness Encyclopedia. (1991). Boston: Houghton Mifflin Co.

Blair, S. N., Tritsch, L., & Kursch, S. (1987). Worksite health promotion for school faculty and staff. Journal of School Health, 57(10), 469-473.

Breckon, D. J., Harvey, J. R., & Lancaster, R. B. (1989). Community health education. Gaithersburg, MD: Aspen Publication.

Chenowith, D. H. (1991). Planning health promotion at the worksite. (2nd ed.). Dubuque, IA: Brown & Benchmark.

Ciampriocotti, R., Deckers, J. W., Taverne, R., el-Gamal, M., Relik-VanWely, L., & Pool, J. (1994). Characteristics of conditioned and sedentary men with acute coronary syndromes. American Journal of Cardiology, 73, 219-223.

Culhane, C. (1993). Recommendations on exercise are modified. American Medical News, 36, 5.

Curb, D. J., & Marcus, E. B. (1991). Body fat, coronary heart disease, and stroke in Japanese men. American Journal of Clinical Nutrition, 53, 1612-1616.

Erfurt, J. C., Foote, A., Heirich, M. A., & Gregg, W. (1990). Improving participation in worksite wellness programs: Comparing health education classes, a menu approach, and follow-up counseling. American Journal of Health Promotion, 4, 270-278.

Gregg, W., Foote, A., Erfurt, J. C., & Heirick, M. A. (1990). Worksite follow-up an engagement strategies for initiating health risk behavior changes. Health Education Quarterly, 17, 455-478.

Gormel, M., Oldenburg, B., Simpson, J. M., & Owen, N. (1993). Worksite cardiovascular risk reduction: A randomized trial of health risk assessment, education, counseling, and incentives. American Journal of Public Health, 83, 1231-1238.

Green, L., & Ottoson, J. (1994). Community health. St. Louis: Mosby Publications.

He, Y., Lam, T. H., Li, L. S., Li, L. S., Du, R. Y., Jia, G. L., Huang, J. Y., & Zheng, J. S. (1994). Passive smoking at work as a risk factor for coronary heart disease in Chinese women who have never smoked. British Medical Journal, 308, 380-385.

Kawachi, I., Colditz, G.A., Stampfer, M. J., Willett, W. C., Mason, J. E., Rosner, B., Speizer, F. E., & Hennekens, C. H. (1994). Smoking cessation and time course of decreased risks of coronary heart disease in middle aged women. Archives of Internal Medicine, 154, 169-176.

Krepostan, A., & Borzak, S. (1993). Coronary heart disease: Seven steps to primary prevention. Consultant, 33, 33-39.

Lovato, C. Y., Green, L. W., & Stainbrook, G. L. (1994). The benefits anticipated by industry in supporting health promotion programs at the worksite. (1-23). In J. P. Opatz (Ed) Economic impact of worksite health promotion. Champaign, IL: Human Kinetics Publishers.

Mayer, J. P., & David, J. K. (1991). Worksite health promotion: Needs, approaches, and effectiveness (eds.). Lansing, MI: Michigan Department of Public Health.

McKenzie, J. G., & Jurs, J. L. (1993). Planning, implementing, and evaluating health promotion programs: A primer. New York: Macmillan Publishing.

Opatz, J. P. (1994). Economic impact of worksite health promotion. (ed.). Champaign, IL: Human Kinetics Publishers.

Prevalence of adults with no known major risk factors for coronary heart disease - behavioral risk factor surveillance system, 1992. (1994). Morbidity and Mortality Weekly, 43, 61-65.

Slyper, A., & Schectman, G. (1994). Coronary artery disease risk factors from a genetic and developmental perspective. Archives of Internal Medicine, 154, 633-639.

U.S. Department of Health and Human Services. (1994) For a healthy nation: Returns on investment in public health. Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (1991). Healthy people 2000: National health promotion and disease prevention objectives. Washington, DC: U.S. Government Printing Office.

U.S. Department of Health and Human Services. (1980). Promoting health/preventing disease: Objectives for the Nation. Washington, DC: U.S. Government Printing Office.

Vidt, D. G. (1993). Hypertension: A new classification system helps you better define risk. Consultant, 33, 53-61.