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EVALUATION OF THE EFFECTS OF HEALTH RISK APPRAISALS AND HEALTH PROMOTION TEACHING ON LIFESTYLE BEHAVIORS

by

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A DISSERTATION

Submitted in partial fulfillment of the requirements for the degree of Doctor of Science in Nursing in the School of Nursing in the Graduate School, The University of Alabama at Birmingham

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ABSTRACT OF DISSERTATION
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Title Evaluation of the Effects of Health Risk Appraisals and Health Promotion Teaching on Lifestyle Behaviors

The purpose of this study was to ascertain if the Army's Health Risk Appraisal (HRA), it's subsequent evaluation letter, and a 4-hour health promotion seminar have an effect on health behaviors and associated physiologic measures. The health behaviors were related to diet and nutrition, exercise and physical fitness, stress, tobacco use, alcohol use, and seat belt use. The physiological measures were cholesterol, blood pressure, and weight. Also, self-efficacy was tested as a predictor of positive behavior change.

The study was conducted at four Army National Guard units. One hundred forty-one subjects participated, 63 in the control group and 78 in the treatment group. The treatment group differed only in that they attended a health promotion seminar. Participation was required by the unit commanders.

Data collection tools used were the Army's HRA and a self-efficacy questionnaire. Pretest and posttest measures of the HRA were analyzed to determine if the treatment group differed significantly from the control group in

terms of behavior change. Only one significant difference appeared--the treatment group reported a greater decrease in work stress over the 3-month research period. No statistically significant differences were noted in the physiological measures. Self-efficacy scores predicted certain behavior changes in three areas: diet and nutrition, exercise and physical fitness, and tobacco use. All statistical testing was conducted using analysis of covariance.

The results of the study indicate that a 4-hour health promotion seminar in conjunction with the Army's HRA evaluation letter effects limited but significant change in one's lifestyle behavior. Also, results indicate that self-efficacy scores are predictive of certain behavior changes.

It is recommended that the study be replicated with a second treatment group that receives not only the teaching and HRA evaluation letters, but counseling/interpretation of the evaluation letters as well, and longitudinal studies be conducted with follow-up at 1-year intervals. Also, nursing educators should equip nurses with the knowledge and skills necessary to conduct health promotion seminars, and nurses should become more involved in health promotion teaching, regardless of work setting.

Abstract Approved by: Committee Chairman Ann Lewis

Program Director Elizabeth Stallbaumer

Date 12/29/92 Dean of Graduate School W. A. Sadler

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CHAPTER I

Introduction

The United States has witnessed a remarkable reduction in infectious and communicable diseases--maladies that once resulted in high death rates for all ages. Today, the leading causes of premature death and disability in America are associated with how and where we live, not with infectious diseases or unpreventable illnesses (Ng & Davis, 1981; United States Department of Health, Education & Welfare [USDHEW], 1979). Approximately 67% of the diseases and premature deaths in the United States today are preventable and are due to unhealthy lifestyles (Califano, 1987).

Because of this high rate of preventable diseases, in 1979 the Surgeon General published a report on the state of the health of the American people and appealed to the public to become responsible for their own health. The Surgeon General outlined certain lifestyle risks that contributed to current illnesses and suggested alternative lifestyle behaviors that should lead to a healthier and prolonged life. In the 1979 publication of Healthy People, the Surgeon General appealed to medical professionals and lay people alike to change the course of the existing health care system, to revolutionize and restructure it

into a system that would emphasize prevention in conjunction with cure. It was with this appeal that the health promotion movement began as a new health paradigm, a model that emphasizes health risks, positive lifestyle behaviors, and individual involvement in the attainment and maintenance of good health (Sloan, 1987; USDHEW, 1979).

The 10 leading causes of death in the United States as cited in Healthy People 2000 (USDHEW, 1991) were: (a) heart disease, (b) cancer, (c) injuries, (d) stroke, (e) chronic lung disease, (f) pneumonia/influenza, (g) suicide, (h) diabetes, (i) liver diseases, and (j) atherosclerosis. It has been suggested that all of these could be substantially reduced if the American people would alter their lifestyle behaviors. Some of the lifestyle behaviors that need to be altered to decrease the incidence and prevalence of these diseases are improper diet, lack of exercise, excessive amounts of stress over a prolonged period of time, smoking and other tobacco use, drug and alcohol abuse, and failure to wear seat belts and utilize other safety measures (Johnson, 1986; Shopland & Brown, 1987; Stephenson, Levy, Sass, & McGarvey, 1987; USDHEW, 1979, 1991).

Although there are other lifestyle behaviors that influence health--such as sleep and rest, dental care, and spiritual fitness--the six lifestyle behaviors most commonly emphasized in health promotion programs are diet and nutrition, exercise and physical fitness, stress management, anti-tobacco use, anti-drug and alcohol abuse, and seat belt safety (United States Department of Health &

Human Services [USDHHS], 1982). These divergent lifestyle behaviors make up the components of a comprehensive health promotion program. Choosing positive behaviors in these six lifestyle areas should not only prolong life, but improve the quality of life as well (Health Education Unit, 1986; Taylor, 1981).

Health professionals are ultimately responsible for disseminating health promotion information, including information on health risks and positive lifestyle behaviors. By increasing health education and promoting individual involvement in health, health professionals should be able to effect an overall improvement in the health of the public.

Often, health promotion programs are aimed at particular segments of the population. Because of its importance to national security, the military, including the reserve components, comprises an appropriate target population for health promotion activities.

The reserve component of the United States (US) military makes up 80% of the US military strength. It is vitally important that these men and women remain physically and mentally fit at all times. These week-end soldiers, as they are called, are in the mainstream of American life and have the same lifestyle behaviors and health risks as the general population. However, unlike the general population, these men and women must maintain combat readiness. Therefore, it is important that an ongoing program be developed for reservists that is

effective in promoting positive lifestyle behaviors. To this end, the United States Army has developed a Health Risk Appraisal (HRA) as a tool to increase awareness of unhealthy lifestyle behaviors and motivate change. However, the HRA has not been evaluated for its effectiveness.

Purpose of Study

The purpose of this study was threefold: (a) to ascertain if the Army's Health Risk Appraisal and its subsequent risk and behavioral evaluation has an effect on health behaviors and associated physiologic measures; (b) to ascertain if the Army's Health Risk Appraisal, subsequent risk and behavioral evaluation, and a health promotion seminar have an effect on health behaviors and associated physiologic measures; and (c) to ascertain if self-efficacy is a predictor of positive behavior changes.

Need for Study

The health promotion paradigm is based on health risks and lifestyle behaviors that predispose one to a state of health. Minimizing health risks and choosing positive lifestyle behaviors lead to good health. Conversely, maximizing health risks and choosing negative lifestyle behaviors lead to ill health (USDHEW, 1979, 1991). Further, the concept of self-efficacy has been proposed as a useful indicator of who will and will not respond with appropriate behavioral changes to health promotion efforts. However, self-efficacy has not been widely evaluated for its effect on health behaviors. The influence of health

risks and lifestyle behaviors on health has been the subject of much research in the last decade. However, the tools used to collect the data on health risks and lifestyle behaviors have not been studied extensively and many have not been evaluated at all. Moreover, the method(s) that best communicate the health promotion message have not been determined. Therefore, there is a need for health risk data collection tools, usually referred to as Health Risk Appraisals, and health promotion teaching methods to be empirically evaluated for their appropriateness and effectiveness in assessing current health status and motivating positive behavioral changes. There also is a need to investigate self-efficacy to determine if it is an accurate predictor of who will and will not make behavioral changes as a result of health promotion efforts. Empirical evidence from such evaluation will enable health promotion efforts to be directed to individuals or groups who would most likely respond to health promotion activities, thus aiding in more accurate evaluation of health promotion efforts.

The United States Army has developed a new HRA to be used on all Army posts to assess health status and motivate appropriate lifestyle behavior. This HRA has not been evaluated for its effectiveness as a motivational tool. The Army has not determined if the HRA alone can motivate behavior change or if the HRA must be used in conjunction with other health promotion strategies to affect change.

Because some people will not change health behaviors regardless of the health promotion method(s) used, it would be prudent to identify those who would likely change health behaviors as a result of health promotion efforts. It has been proposed that individuals who are more self-efficacious will be most likely to change their behavior. Therefore, taking self-efficacy into consideration when evaluating health promotion efforts may better help determine the worth of different health promotion efforts.

In this study, the utility of the Army's HRA used alone and the use of the combined HRA/health promotion seminar was evaluated. Also, the effect of participants' self-efficacy was evaluated in relation to health behavior changes and changes in physiologic measures.

The American Nurses' Association's (ANA) (1973) Standards of Nursing Practice identifies health promotion as a major goal of nursing. In fact, the nursing model of health care is based largely on health promotion. It is therefore appropriate that nursing evaluate the effectiveness of health promotion tools and a health promotion seminar as a teaching method.

Conceptual Framework

Self-efficacy is a theoretical conception within the social learning framework (Bandura, 1977a; Stretcher, DeVellis, Becker, & Rosenstock, 1986). Self-efficacy has utility in the health promotion arena in helping to explain behavior and behavioral change (Schunk & Carbonari, 1984; Stretcher et al.). Self-efficacy is used to predict and

explain why certain recommended behavior changes are not attempted as well as why certain behaviors are changed and maintained (Bandura; Schunk & Carbonari).

According to self-efficacy theory, beliefs about one's capabilities to perform a certain behavior and the subsequent outcome of the behavior are key to one's actions. One's perceptions may not necessarily be true, nevertheless, they influence actions. Further, the concept of self-efficacy relates to beliefs about performing specific behaviors in specific environmental situations. Thus, an individual's efficacy expectations will vary greatly depending on the particular task and particular environment which is confronted (Bandura, 1977a, 1977b; Stretcher et al., 1986).

Perceived self-efficacy influences all aspects of behavior, including acquisition of new behavior, maintenance of existing behavior, and changes in undesirable behavior. Self-efficacy affects the amount of effort one will expend on a task and the length of time one will persist in the face of obstacles. Individuals with a low sense of efficacy for performing a certain behavior will most likely avoid it. However, individuals with a high sense of efficacy will exert the time and energy necessary to accomplish a certain behavior even in the face of obstacles. Successful accomplishment of a behavior increases self-efficacy toward the same or similar behavior and causes one to persist longer at a task, even in the

face of difficulties (Bandura, 1977a; Schunk & Carbonari, 1984; Stretcher et al., 1986).

Expectations of self-efficacy are based on four major sources of information: (a) performance accomplishments, (b) vicarious experience, (c) verbal persuasion, and (d) physiological-emotional states. Performance accomplishments of past or existing behavior lead to high self-efficacy regarding performance of the same or similar behaviors; in some cases a high level of efficacy is transferred to activities or behaviors substantially different from the behavior mastered. Successes raise self-efficacy, repeated failures lower it. However, an occasional failure after repeated accomplishments will not lower one's self-efficacy to any appreciable degree (Bandura, 1977a; Schunk & Carbonari, 1984; Stretcher et al., 1986). Prompting recall of past performance accomplishments can be used as a strategy to enhance self-efficacy.

Vicarious experience includes learning through observation of events or other people. Seeing others successfully perform activities or behaviors causes one to believe they, too, can successfully perform the activities or behaviors, at least to some degree. Efficacy expectations from observation alone are likely to be weak and vulnerable to change (Bandura, 1977a), although when vicarious experiences are combined with other interventions, self-efficacy may be increased.

Verbal persuasion from others can also induce a change in perceived efficacy by suggesting that one has the

capabilities to perform a task or behavior. Efficacy through persuasion is heightened if the persuader is viewed as a respected authority, has demographic similarities to the participant, or has actually accomplished the task or behavior being persuaded. Other modes of verbal persuasion are through self-instruction, exhortation, suggestion, and interpretive treatments. Efficacy from verbal persuasion is weak and short-lived unless the participant successfully accomplishes the task or behavior he/she has been persuaded to perform (Bandura, 1977a, 1977b; Schunk & Carbonari, 1984).

One's physiological-emotional state provides information that can influence efficacy expectations. Moderate physiological arousal enhances performance, whereas high physiological arousal usually impairs performance. People are less likely to succeed if they are very tense, anxious, and viscerally agitated (Bandura, 1977a; Stretcher et al., 1986).

Since the initiation and maintenance of desirable behaviors are based on one's perceived self-efficacy, not necessarily on actual coping or behavioral skills, self-efficacy must be measured independently of performance. However, performance measures usually directly relate to efficacy expectations. Efficacy expectations provide an explicit basis for predicting the occurrence, generality, and persistence of desired behaviors (Bandura, 1977b).

Research Questions

The following research questions were posed for this study:

1. Will the treatment group that completes the Health Risk Appraisal and attends the health promotion seminar show a greater positive change in self-reported data and physiologic measures than the control group that only completes the HRA?

2. Will the self-efficacy scores predict behavior changes as reflected in the HRA?

Definition of Terms

The following terms were defined for the purposes of this study:

Health Promotion Seminar - a 4-hour educational program designed by the researcher to teach participants about diet and nutrition, exercise and physical fitness, stress management, tobacco cessation, anti-alcohol and drug abuse, and seat belt safety. Seminar participants were given information about how lifestyle behaviors relate to health, and were taught strategies to alter at-risk lifestyle behaviors.

At-Risk Lifestyle Behaviors - behaviors that may lead to health problems and may ultimately lead to premature mortality. Examples of such behaviors are: (a) overeating and nutritional deficits, (b) lack of exercise, (c) excessive stress for prolonged periods of time, (d) tobacco use, (e) drug and/or alcohol abuse, and (f) failure to use seat belts when riding or driving vehicles.

Health Risk Appraisal (HRA) - a self-report tool developed by the US Army that questions participants about their diet, exercise habits, level of stress, tobacco and alcohol use, and use of seat belts. The HRA also includes the physiological measurements of blood pressure, total cholesterol level, height, and weight.

Self-Efficacy - belief in one's ability to perform a certain behavior. In this study, self-efficacy is the score on the researcher-designed self-efficacy tool of the subject's perceived ability and desire to change a behavior.

Behavioral Change - changes in self-reported behavioral data, plus changes in blood pressure, total cholesterol level, and weight.

Assumptions

The following assumptions were applied to this study:

1. In general, people value health.

2. Minimizing health risks by choosing positive lifestyle behaviors leads to good health; maximizing health risks by choosing negative lifestyle behaviors leads to ill health (USDHEW, 1979, 1991).

3. Every human being has the potential to more competently manage their health by altering lifestyle behaviors to reduce health risks (Pender & Pender, 1987).

4. A period of 3 months is sufficient time for the Health Risk Appraisal to reflect changes in lifestyle behavior.

5. People will honestly and correctly complete the HRA.

6. Physiologic measurements will be accurately measured and recorded.

7. Participants will accurately report self-efficacy relating to the six behavioral areas measured.

Limitations

The following limitations were developed for this study:

1. Self-report may cause responses to be confounded by social and professional desirability.

2. A 3-month follow-up on recommended behavioral changes may be inadequate in terms of time to make the changes if several changes are recommended.

3. A 3-month follow-up on recommended behavioral changes may be insufficient to evaluate lasting behavioral changes.

4. A sample of convenience precludes inferences being made to other populations.

5. Participation in the study was mandatory.

CHAPTER II

Review of Research

A significant amount of research has been conducted on single intervention health promotion programs, but there has been relatively little research conducted on the effectiveness of comprehensive health promotion programs. Because comprehensive health promotion programs employ multiple interventions that should have a great impact on behavioral lifestyles and health, a review of comprehensive health promotion research is presented. Also, a single intervention program employing HRAs only and a review of studies relating self-efficacy to health promotion efforts is presented.

HRA Single Intervention Health Promotion Program

A study conducted at the Upjohn Company in the early 1980s looked at the effects HRAs had on lifestyle behaviors. One hundred randomly selected employees were divided into two groups. Both groups completed HRAs at the beginning of the study and again at 6 months. The treatment group received individual counseling after completing the first HRA regarding their results and how they could improve their life expectancy. The control group received their reports by mail with no personal contact or counseling. Analysis of covariance was

performed on the post HRA life expectancy data; the mean change in number of years of life expectancy was calculated. Findings indicated the middle and older age employees increased their life expectancy; also, life expectancy in general increased among employees in different job categories. A follow-up telephone survey was then conducted to determine the study's worth. It was determined that HRA completion and evaluation increased awareness of lifestyle and its health effects. As one employee stated, even though some lifestyle changes were not immediately evident, the HRA "may have planted a seed for some future behavioral change" (Styrd, 1982, p. 20).

Comprehensive Health Promotion Programs

A large southcentral hospital implemented a comprehensive health risk appraisal program for its employees; HRAs were completed by every employee. After HRA evaluation letters were distributed to the employees, follow-up classes were conducted by the hospital's occupational health nurses to aid in general interpretation of the data. All employees were also encouraged to make private appointments with the occupational health nurses for follow-up. Any employee determined to be at high risk for heart disease or cancer was referred to a physician, and then to appropriate risk reduction classes (i.e., smoking cessation, weight reduction, cholesterol management, blood pressure reduction, fitness, breast self-examination, and colorectal cancer detection). The variables weight, blood pressure, cholesterol level, and

smoking were analyzed on 387 employees for a 2-year period. The study findings indicated that employees had significantly reduced their health risks in all categories except weight, whether they attended the risk reduction classes (Pilon & Renfroe, 1990).

The effects of a pilot health promotion program at AT&T Communications were evaluated. One treatment group was given an initial HRA and offered health education modules on fitness, reduction of backache, weight control, stress management, smoking cessation, cholesterol reduction, cancer screening, nutrition, and interpersonal communication. A second treatment group was given the HRA with no health education, and a control group was given neither the HRA or the health education. After 1 year, the treatment group offered the health education modules showed greater overall improvements than the second treatment group and the control group. Improvements were demonstrated in exercise levels, ability to stop smoking, perceptions of own health, and (at one location) amount of type A behavior. The risk of heart attack and the overall risk of dying in the next 10 years were significantly reduced for both treatment groups. Treatment group participants who were offered health education modules also became more committed to improving their health related behaviors, felt more positive toward AT&T, their coworkers, and supervisors, and felt generally more productive and energetic. Additionally, at one location even treatment group employees who did not participate in health education

increased their belief that AT&T was interested in their personal welfare. On the basis of these data, it would appear that health promotion programs can offer substantial benefits not only to employees, but also to the organizations that choose to implement such programs (Spilman, Goetz, Schultz, Bellingham, & Johnson, 1986).

A study examining treatment related changes in weight, exercise, and diet was conducted with 335 educators. The first group (n = 220) completed a HRA and a Health and Fitness Profile and subsequently attended a 2-hour health promotion workshop. The second group (n = 115) completed only the Health and Fitness Profile. At an 8-week follow-up, it was revealed that participants completing the forms and attending the workshop lost slightly more weight than those in the group completing only the health and fitness profile. The amount of exercise increased slightly in the first group. Diet behaviors remained virtually identical for both groups. Thus, it can be suggested that a brief health promotion workshop following completion of health testing leads to slight behavioral changes (Robbins, Coogle, & Link-Mullison, 1987).

A quasi-experimental research design was used to evaluate a comprehensive health promotion program for government employees in South Carolina. The program included the components of exercise, nutrition, stress management, anti-tobacco use, and alcohol control, and behaviors related to those areas were evaluated. The control group (n = 313) only received quarterly newsletters

with health updates during the first year of the program; plus, they had two walking events available to them through their agency. The intervention group formed health promotion committees and had lectures and films available to them on the aforementioned health promotion components the first year of the program. Questionnaires to determine lifestyle behaviors related to the six health promotion components were administered to both groups at the inception of the program and again at 10 months. Findings revealed positive improvements in health habits and health behaviors in both groups, especially in the intervention group. Significant increases in exercise were found in both intervention and control groups. Consumption of chicken increased significantly in the intervention group, but few other dietary changes were found. Alcohol consumption was significantly reduced in the intervention group, but not in the control group. Stress measures did not change in either the intervention or the control group. These findings suggest a ripple effect in agencies that employ health promotion programs, but the more formalized instruction in health promotion leads to more positive lifestyle behavioral changes (Kronenfeld et al., 1987; Kronenfeld, Jackson, Davis, & Blair, 1988).

The Southern New England Telephone Company offers a comprehensive health promotion program to its employees and their families throughout the state of Connecticut. The program consists of 18 different health education courses. A large-scale study to evaluate the entire program is in

effect, but to date, only general measures in three areas are available. One year after attending a smoking cessation course, 34% of the participants have not resumed smoking. Average weight loss 3 months after completing a weight control course was 10 pounds. The majority of participants experienced lower levels of stress and anxiety after completing a stress management course. These positive lifestyle changes suggest the importance and impact of comprehensive health promotion programs within corporations (Kaplan & Burch-Mirakan, 1986).

The Johnson and Johnson Company offers a comprehensive health promotion program to its employees. Included in this program is a health screen, a health education seminar, and health promotion modules on smoking cessation, exercise, stress management, nutrition, weight control, and general health knowledge. A 2-year quasi-experimental study was designed to assess the impact of the program on biomedical data, lifestyle, job performance, general attitudes, turnover, absenteeism, and health care costs. Four Johnson and Johnson companies received the comprehensive program, and five companies received only an employee health screen. Preliminary evidence after 1 year of the program clearly suggested that the groups receiving the comprehensive program consistently showed greater improvements in the major health and lifestyle areas addressed by the program. Specifically, statistically significant differences were observed in fitness level,

weight control, smoking cessation, stress management, and reported employee attitudes about work (Fielding, 1984).

Control Data Corporation's comprehensive health promotion program consists of an employee health survey, individual health risk assessments, risk reduction courses, and long-term social support to encourage the maintenance of lifestyle changes. At present, data are limited to self-reports of changes in health status and behavior. Participants in courses on smoking cessation, exercise, weight control, stress management, and nutrition reported statistically significant improvements compared to nonparticipants regardless of whether they received a HRA. Also, employees at study locations, regardless of whether they participated in the health promotion program, reported statistically significant greater change than did employees at control locations on all of the above variables except alcohol consumption. These findings suggest that health promotion programs positively impact on lifestyle behaviors and have a ripple effect in the companies where they are conducted (Jose & Anderson, 1986).

Two hundred ninety-two subjects who participated in a comprehensive work site health promotion program reported a reduction in cardiac and other health risks after a 1-year period. The health promotion program consisted of multiphasic screening, HRA completion, and a brief health education program. Multiphasic screening consisted of a blood chemistry profile, electrocardiogram, tuberculosis skin test, stool hemocult, pap smear, weight, and blood

pressure determination. The health education consisted of a session to introduce the study and a second session to interpret the HRA results. After approximately 1 year, a significant reduction was noted in systolic blood pressure in men and women aged 50 to 70 years, cholesterol in men over age 40, and reported alcohol consumption in men. A significant increase was noted in the reported frequency of monthly breast self-exams in women, and in the amount of exercise and percentage of time seat belts were used in both sexes. No change was noted in reported amount of cigarette smoking, weight, fasting blood glucose, and triglycerides (Rodnick & Bubb, 1978).

A health promotion program integrated into a physician's clinical practice revealed positive lifestyle changes in 4 weeks in approximately one-half of the clients who participated. Subjects were divided into three treatment groups and a control group. The treatment subjects received varying interventions, from an assessment questionnaire (equivalent to a HRA), to educational self-help materials, to a brief one-on-one counseling session to discuss health risks and a prescription for lifestyle change. Patients who received one or more treatment interventions reported significantly more behavioral change ($p = .001$) at follow-up than those who received no treatment interventions. The most effective approach included all three interventions. Lifestyle behaviors evaluated were cigarette smoking, exercise, nutrition,

alcohol use, accidents, and stress (Kelley, 1988; Kelley, Zyzanski, & Alemagno, 1991).

Two 5-year longitudinal studies indicated that employees exposed to comprehensive work site health promotion programs, which included health screening and health promotion education, experienced less utilization of medical care and costs than control subjects not exposed to work site health promotion programs (Bly, Jones, & Richardson, 1986; Gibbs, Mulvaney, Henes, & Reed, 1985). The Blue Cross/Blue Shield of Indiana study showed that medical utilization rose initially due to risk detection, but then decreased substantially after the first year (Gibbs et al., 1985). A 2-year longitudinal study indicated that employees who participated in a comprehensive work site health promotion program showed improvement in level of cardiorespiratory fitness and decreases in disability absences at work and health insurance claims costs (Brown, Russell, & Morgan, 1984). Also, a 6-year longitudinal study at DuPont indicated that employees who participated in a comprehensive work site health promotion program significantly decreased their rate of absenteeism (Bertera, 1990). These findings suggest that comprehensive work site health promotion programs positively impact on employee health.

A study by Alexy (1985) was conducted to determine if provider goal-setting or collaborative participant-provider goal-setting was more productive in terms of altering at-risk lifestyle behaviors than was no goal-setting in

conjunction with a comprehensive health promotion program. All three groups completed a health risk appraisal questionnaire at the beginning of the study and again at 3 months for follow-up purposes. Risk areas in order of priority for each individual were discussed with each participant after the health risk questionnaires were evaluated. Any questions regarding risk factors or resources were answered for all individuals in all groups. In group one (n = 52), health providers outlined six specific health promotion goals for the participants. The participants in group two (n = 54) were allowed to select the goals they wished to achieve from the areas covered on the health risk questionnaire. The control group (n = 46) did not set goals; they were included to determine if health risks would be reduced simply from completing a health risk questionnaire and receiving individual feedback related to the findings. The greatest amount of change in health behaviors was found in the provider goal-setting group; they decreased alcohol consumption, increased usage of seat belts, and increased the amount of exercise. Less change was observed in the collaborative participant/provider goal-setting group; they increased the amount of exercise and decreased overall weight. The only change in health behavior in the control group was an increase in the amount of exercise. These findings suggest that goal-setting, particularly provider goal-setting, in comprehensive health promotion programs is an important

factor in producing a greater number of positive lifestyle behavioral changes.

Even though few comprehensive health promotion programs have been evaluated for effectiveness in changing lifestyle behaviors and improving health, the results of those reported indicated that definite positive changes have occurred. This suggests that quality of life may be an immediate or at least intermediate result of comprehensive health promotion efforts, but it will be many years before long-term effects (i.e., sustained lifestyle changes and prolongation of life) can be determined.

Self-Efficacy and Health Promotion Efforts

Self-efficacy has not been reported as being used conceptually in multiple intervention health promotion programs; however, it has been used in single intervention health promotion programs. Self-efficacy has been used to explain behavior changes, predict effects of different treatment methods, and improve treatment performance in single behavior health promotion efforts (i.e., smoking cessation, weight control, alcohol and drug abuse, and exercise).

For smoking cessation, several studies have examined the relationship between self-efficacy and abstinence from smoking. Chambliss and Murray (1979a) studied 46 subjects to determine the effects of placebo medication versus self-efficacy on smoking cessation. All subjects were given placebos the first week of the study with instructions to take one a day to aid them on smoking reduction. At the

end of the first week, one-half of the subjects were debriefed and were told that all smoking reduction thus far was attributed to their efforts only, which increased their self-efficacy. The second week of the study, the self-efficacy group showed a greater reduction in smoking than the placebo group. This suggests that self-efficacy manipulation leads to increased smoking cessation.

Wojcik (1988) included 75 smokers enrolled in a formal nonsmoking treatment program and 75 smokers in a self-help treatment program in a study to determine what factors were related to smoking cessation. Questionnaire results revealed self-efficacy was the strongest predictor of abstinence versus relapse, but more so for the self-treatment group than for the program treatment group. Persons attributing greater power to health professionals were more likely to relapse.

DiClemente (1981) surveyed 63 heavy smokers who had quit smoking by three different methods. Subjects were administered a self-efficacy measurement tool and a demographic and smoking history questionnaire 1 month and 5 months after they stopped smoking. Efficacy expectations were highly related to the ability to maintain non-smoking behavior. Continued abstainers showed significantly higher self-efficacy scores than recidivists. Also, efficacy expectations showed predictive superiority over past performances in smoking cessation.

Anderson and Anderson (1990) studied 16 former smokers and 15 current smokers to determine why they had or had not

quit smoking. Questionnaire responses revealed that when attribution of self-efficacy expectations were combined with demographic variables, the predictive power of success in smoking cessation improved and an understanding of the smoking cessation process increased.

Two studies have been conducted to determine the effects of nicotine fading and self-monitoring procedures on smoking cessation and controlled smoking. Nicki, Remington, and MacDonald (1984) replicated an earlier study conducted by Foxx and Brown (1979) to see if self-instruction and self-efficacy training during a 6-week nicotine fading program would produce positive results. The groups that received a combination of nicotine fading, self-monitoring and self-efficacy training were superior in terms of abstinence from smoking. Self-efficacy scores were found to covary with overall abstinence rates when measured simultaneously or in prospect. Increases in self-efficacy paralleled overall decreases in smoking rate and nicotine intake. Baer and Holt (1986) studied 146 subjects in a 6-week smoking cessation program combining nicotine fading and cognitive-behavioral strategies. Efficacy ratings obtained 2 months after treatment were highly predictive of future relapse. Therefore, self-efficacy measures clearly predict smoking behaviors in smoking/self-efficacy studies.

Weight loss has also been predicted and explained by self-efficacy. Chambliss and Murray (1979b) theoretically replicated their smoking cessation study to see if

self-efficacy would also enhance weight loss. Sixty-eight females who were overweight an average of 31% were studied for 4 weeks. All subjects were given placebos and were told to take one a day to aid in weight loss, plus they were put on a moderate diet, a mild exercise program, and were taught simple behavior modification techniques. At midpoint of the study, the self-efficacy condition group was debriefed about the placebo medication and was told the weight loss they had experienced during the program was due to their own efforts, thereby increasing their self-efficacy. These subjects were also given a self-efficacy lecture at this point explaining that personal effort and self-control were major factors in a weight loss and weight maintenance program. At the end of the study period, the largest weight loss was for subjects with high internal locus of control who were in the self-efficacy treatment group. Subjects with higher external locus of control scores who received a drug efficacy lecture also showed a weight loss. Results clearly show that a weight reduction program designed to increase self-efficacy beliefs is quite successful with subjects who have high internal locus of control, but not with subjects who have high external locus of control. The latter group responds best to a program designed on medical attribution.

Berrier and Avard (1986) looked at the ability of self-efficacy to predict both short- and long-term weight loss as well as its effects on attrition from a weight loss program. Sixty-two females participated in a 10-week

weight loss program which emphasized cognitive-behavioral self-control techniques. The subjects completed two self-efficacy scales, both relating to efficacy expectations. Weight loss at follow-up was related to an increase in the subjects' perceived capabilities toward performing the 10 techniques utilized in the treatment program, while weight gain was associated with a decrease in this measure. Those who dropped out of the program had an even lower score on the measure than the subjects who remained in the program.

Edell, Edington, Herd, O'Brien, and Witkin (1987) studied 147 subjects at least 50 pounds overweight to determine if self-efficacy and self-motivation would predict outcome in an intensive weight loss program. Self-efficacy was measured by efficacy estimates and outcome expectancies. These data were analyzed through multiple regression on actual weight loss, adjusted weight loss, and percent of sessions attended. Significant correlations were found between self-efficacy measures and weight loss.

Forster and Jeffery (1986) looked at gender differences in weight loss and self-efficacy in 113 subjects. Weights were obtained at pretreatment, posttreatment, and at 1-year follow-up. Self-efficacy questionnaires were administered at pretreatment and posttreatment. Data revealed that women's self-efficacy increased during the 16-week treatment period, but men's self-efficacy did not increase. Short-term weight loss was not related to gender, but women were more successful in maintaining weight loss. Self-efficacy in eating normally

during a social situation was positively associated in men with short-term weight loss. Self-efficacy in controlling mood related eating was positively associated with weight maintenance in men. Even though men and women seem to differ along several dimensions with regard to weight treatment responses, self-efficacy seems to be a fair predictor of weight loss in men and women.

Long-term weight loss was predicted by self-efficacy scores in a study conducted by Leon and Rosenthal (1984). Forty-seven subjects enrolled in a weight loss program completed a self-efficacy scale by rating the degree to which they would refrain from eating in 30 different situations. The self-efficacy scores were not significantly correlated with weight loss at the end of the program, but they were at the 8-month follow-up. Again, self-efficacy seems to be a predictor of weight loss in overweight individuals.

In the area of drug and alcohol abuse, self-efficacy has been used to predict abstinence and relapse (Burling, Reilly, Moltzen, & Ziff, 1989). Monthly in-treatment ratings of self-efficacy to avoid drug and alcohol abuse were examined among 419 substance abuse inpatients of a residential treatment community. Posttreatment interviews were conducted with 81 patients approximately 6 months following discharge to assess the relationship between self-efficacy and relapse. Self-efficacy increased during treatment and was higher among abstainers than relapsers at follow-up. However, low self-efficacy at intake was

related to longer inpatient residence but more positive conditions at discharge. Furthermore, abstainers had slightly lower self-efficacy scores than relapsers at intake and increased their self-efficacy twofold over relapsers during the treatment period. However, self-efficacy ratings at the end of treatment were not related to substance abuse at follow-up. Thus, high self-efficacy during substance abuse treatment is an indicator of abstinence posttreatment.

Sallis et al. (1989) studied the determinants of vigorous exercise in a large community and determined self-efficacy was the variable most highly correlated with the behavior. Associations between learning theory variables and self-reported exercise were analyzed from 2,053 subject responses, and self-efficacy was highly predictive of vigorous long-term exercise.

Therefore, self-efficacy has been explored as the conceptual link among efficacy expectations, outcome expectations, and single behavioral change following a health promotion program, and a definite positive relationship has been identified. In the current study, self-efficacy was studied in relation to multiple health promoting behaviors.

CHAPTER III

Methods

Presented in Chapter III are the methods used to accomplish this study. Included is a discussion of the design, sample, instrumentation, procedures, and data analysis.

The purpose of the study was threefold: (a) to ascertain if the Army's Health Risk Appraisal and its subsequent risk and behavioral evaluation has an effect on health behaviors and physiologic measures; (b) to ascertain if the Army's HRA, subsequent risk and behavioral evaluation, and a health promotion seminar have an effect on health behaviors and physiologic measures; and (c) to ascertain if self-efficacy is a predictor of positive behavior changes.

The following research questions were posed for this study:

(1) Will the treatment group that completes the Health Risk Appraisal and attends the health promotion seminar show a greater positive change in self-reported data and physiologic measures than the control group that only completes the HRA?

(2) Will the self-efficacy scores predict behavior changes as reflected in the HRA?

Design

A quasi-experimental pretest-posttest design was used with a treatment and a control group. The independent variables were the health promotion seminar and the self-efficacy scores. The dependent variables were the HRA self-reported behaviors and the physiological measures of blood pressure, total cholesterol level and weight.

Sample

The sample for this study was one of convenience, consisting of 141 Alabama Army National Guardsmen designated by the Chief-Of-Staff of the Alabama Army National Guard. The control group was comprised of 63 National Guardsmen, and 78 National Guardsmen comprised the treatment group. These subjects were males and females between the ages of 19 and 61 years and included both officers and enlisted personnel.

Instrumentation

The Army's HRA was used to record self-reported data on behavioral lifestyles and on physiologic measurements. Behavioral lifestyles related to diet and nutrition, exercise and physical fitness, stress, smoking and tobacco use, alcohol use, and seat belt use/safety. Physiologic measurements consisted of blood pressure, total cholesterol level, and weight.

Twenty-one of 53 self-reported behavior items in the HRA were analyzed to determine lifestyle changes (Appendix A). Five items related to diet and nutrition, two items related to exercise and physical fitness, eight items

related to stress, four items related to smoking and tobacco use, one item related to alcohol use, and one item related to seat belt use/safety. The 21 items are listed according to behavioral categories.

Fourteen items were not analyzed because they did not relate to the six lifestyle behaviors investigated, and 18 items were not analyzed because they asked subjects to recall certain events that occurred in the past 1 to 2 years, making a 3-month comparison of events invalid. The physiologic measures of total cholesterol, blood pressure, and weight were analyzed to indicate one or more behavior changes. All three physiologic measures may change subsequent to behavior changes in all categories except seat belt use/safety.

The Army's HRA was developed jointly by the Center for Disease Control in Atlanta and the Army Health Promotion branch. The instrument was field tested in June 1990 on six Army posts. The answer sheet is computer ready for ease and efficiency in evaluation. A computerized evaluation in letter format is produced for each HRA that is entered (Appendix B). The evaluation letter contains information specific to each participant on their behavior/wellness score, risk age, possible risk age, typical modifiable risk/lifestyle behaviors for their age, positive lifestyle behaviors/habits, and suggested alternative lifestyle behaviors to improve their risk profile.

The Self-Efficacy Tool (Appendix C) was designed by the researcher, based on the work of Bandura (1977b; Stretcher et al., 1986). The tool measures one's desire and perceived capability of performing healthy lifestyle behaviors.

Each of the six health promotion topics presented in the seminar and identified in the HRA was addressed in the self-efficacy questionnaire. The subjects were asked in the self-efficacy questionnaire if they desired to make positive behavior changes in any of the six areas and if they believed they could make positive changes in any of the areas. The Likert scale responses indicated the subjects' efficacy toward making health behavior changes; a high score indicated high self-efficacy and a low score indicated low self-efficacy.

Procedure

To ensure adequate protection of human rights, the research proposal was submitted to the Institutional Review Board (IRB) at the University of Alabama at Birmingham for review. After approval was obtained from the Review Board (Appendix D), a letter (Appendix E) was sent to the Chief-Of-Staff of the Alabama Army National Guard requesting permission to collect data and present a health promotion seminar to National Guardsmen. Dates for data collection and the health promotion seminars were scheduled at the convenience of the investigator and the National Guard. Confidentiality of subjects was maintained by reporting aggregate data.

Four National Guard units participated in the study. All National Guard members who attended drill on the weekend the study began were instructed by the Chief-Of-Staff and unit commander to participate in the research study. Guard members were assigned numerically sequential numbers as they entered the testing room. All subjects with even numbers were assigned to the control group, and subjects with odd numbers were assigned to the treatment group.

Initially, 169 subjects were assigned to the control group and 170 subjects were assigned to the treatment group. Both groups completed pretests consisting of the self-efficacy tool and the HRA on the day the study began. In addition, the treatment group participated in a 4-hour health promotion seminar on the weekend the study began. For both groups, pretest measures of blood pressure, total cholesterol level, height, and weight were obtained and recorded on the HRA form by research assistants at each research site. The research assistants were senior baccalaureate nursing students who had been evaluated on each type of measurement.

Blood pressure values were obtained from the subjects' left arms while the subjects were in the sitting position. The total cholesterol levels were determined from serum obtained from finger stick blood samples analyzed on the Kodak DT-60 analyzer. The heights and weights were measured to the nearest inch and pound with official calibrated scales.

Following completion of the HRA, each subject gave the HRA and the completed self-efficacy questionnaire to the computer specialist. If any question(s) were left blank on the HRA form, the computer specialist had the Guardsman complete the form at that time. The HRA scan strips were then detached from the HRA booklet and were scanned by a computerized scanner. The self-efficacy questionnaires were collected for hand entry of the data.

After all subjects submitted their completed HRA and self-efficacy questionnaires, the treatment group proceeded to a classroom for a 4-hour health promotion seminar. The health promotion seminar included information (Appendix F) provided by the Army in lecture/discussion format on diet and nutrition, exercise and physical fitness, stress management, smoking cessation, drug and alcohol abuse, and seat belt safety. More specifically, diet and nutrition content included information on the basic four food groups and recommended servings per day, essential nutrients, and points on how to lose weight. The exercise and physical fitness content included information on aerobic exercises and how to calculate an individualized exercise prescription. The stress management content addressed common stressors in one's life and strategies for managing stress. The tobacco cessation content included health facts and statistics related to tobacco use, strategies on smoking cessation, and information about smoking cessation programs. The alcohol/drug abuse content included facts on alcohol and drug use, and information about organizations

that can help with drug and alcohol problems. The seat belt safety content included facts and statistics on motor vehicle accidents related to seat belt nonuse. All lectures were given by the investigator with time for discussion at the conclusion of each topic.

At the conclusion of the seminar, the HRA evaluation letters were given to all subjects in the control and treatment groups. No interpretation of the evaluation letters was provided due to lack of time.

Three months after the study began, a follow-up posttest was conducted. The control group and the treatment group completed only the HRA at that time. The research assistants who had previously conducted the physiological measurements also conducted the measurements at the follow-up visit. The same procedures were used for conducting the physiologic measurements. The research assistants then entered the measurements on the HRA.

Following completion of the HRA, each subject gave his/her HRA to the computer specialist as before. If any question(s) were left blank on the HRA form, the computer specialist had the Guardsman complete the form at that time. Evaluation letters were given to each subject at the end of the day.

Due to Desert Storm activities and other obligations, only 141 subjects completed the posttest measures. Of these 141 subjects, 63 were in the control group and 78 were in the treatment group.

Data Analysis

Self-efficacy scores, HRA self-reported data, and physiologic measurements were analyzed using analysis of covariance (ANCOVA) to answer the research questions and to determine which factors in combination predicted significant behavior changes. Comparisons of pretest and posttest measures indicated behavior changes made during the study period.

Descriptive statistics were used to describe and compare the treatment and control subjects on the demographic characteristics of age, race, rank, and marital status. All statistical analyses were performed with the Statistical Packages for the Social Sciences (SPSS) (Norusis, 1983) computer program.

CHAPTER IV

Presentation and Analysis of Findings

Presented in Chapter IV are the findings from the analysis of data. The purpose of this study was threefold: (a) to ascertain if the Army's Health Risk Appraisal and its subsequent risk and behavioral evaluation has an effect on health behaviors and physiologic measures; (b) to ascertain if the Army's Health Risk Appraisal, subsequent risk and behavioral evaluation, and a health promotion seminar have an effect on health behaviors and physiologic measures; and (c) to ascertain if self-efficacy is a predictor of positive behavior changes. The research questions were:

1. Will the treatment group that completes the Health Risk Appraisal and attends the health promotion seminar show a greater positive change in self-reported data and physiologic measures than the control group that only completes the HRA?

2. Will the self-efficacy scores predict behavior changes as reflected in the HRA?

Analysis of covariance (ANCOVA) was used in this quasi-experimental study of 141 Alabama Army National Guardsmen. Of these Guardsmen, 63 comprised the control group and 78 comprised the treatment group. Both groups

completed the pretest and posttest HRA and the self-efficacy questionnaire. The treatment group also attended a 4-hour health promotion seminar.

Description of Subjects

The study sample consisted of 141 Alabama Army National Guardsmen from four National Guard units. The control group was comprised of 63 randomly selected subjects, and the treatment group was comprised of 78 randomly selected subjects. All subjects were instructed to participate by their commander.

Demographic data were obtained from the HRA. Nineteen females and 122 males participated in the study. Ages ranged from 19 to 61 years, with a mean age of 33.6 years. The most frequent age reported was 22 years. The subjects' ranks ranged from Enlisted-1 (E-1) or private to Officer-5 (0-5) or lieutenant colonel. The mean rank was E-7, the median rank was E-6, and the mode was E-5. The racial background of subjects was black and white; 47 were black and 94 were white. Eighty-five subjects were married and 56 were not married. Table 1 depicts the demographic characteristics of the control and treatment groups.

Findings

The data were analyzed using analysis of covariance (ANCOVA). The statistical results are presented for each research question.

Research Question 1

Will the treatment group that completes the HRA and attends the health promotion seminar show a greater

Table 1

Demographic Characteristics

	Control Group (n = 63)	Treatment Group (n = 78)
Characteristic	n	n
Sex		
Male	54	68
Female	9	10
Age (in years)		
19-25	17	21
26-34	22	21
35-39	9	12
40-45	9	10
46-61	6	14
Race		
Black	18	29
White	45	49
Marital Status		
Married	39	46
Single	24	32
Rank		
E-1	0	2
E-2	1	3
E-3	3	3
E-4	11	12
E-5	17	16
E-6	9	20
E-7	2	7
E-8	1	4
E-9	1	0
WO-1	0	0
WO-2	0	0
WO-3	1	1
WO-4	0	1
O-1	3	2
O-2	3	1
O-3	7	4
O-4	4	1
O-5	0	1

positive change in self-reported data and physiologic measures than the control group that only completes the HRA?

Behaviors related to six health areas in the HRA were analyzed. The six areas were: (a) diet and nutrition, (b) exercise and physical fitness, (c) stress management, (d) tobacco use, (e) alcohol use, and (f) seat belt use/safety. The physiologic measures of blood pressure, total cholesterol, and weight relate to each behavioral area except seat belt use/safety.

The treatment group reported decreased work stress over the 3-month research period as compared to the control group (t = 2.398; df = 83; p = .019). Changes in diet and nutrition were also noted in the two groups at the conclusion of the study. Although reported changes in diet were not statistically significant, the changes approached statistical significance. The treatment group reported a greater decrease in fat intake compared to the control group (t = 1.777; df = 83; p = .079), and reported an increased frequency of eating well-balanced meals compared to the control group (t = 1.728; df = 83; p =.088) (Table 2).

No statistically significant differences were found in the two groups in exercise and physical fitness, tobacco use, alcohol use, and seat belt use/safety. Also, no statistically significant differences were found in the physiologic measures of blood pressure, total cholesterol, and weight (Table 3).

Table 2

Effect of Treatment of Three Variables

	Mean Change = SE		ANOCOVA Test*		
Variable	Control	Treated	t	df	p
Work stress	.0476±.112	-.1538±.080	2.398	83	0.019**
Dietary fat intake	-.2222±.114	-.4108±.110	1.777	83	0.079
Frequency of well-balanced meals	.1270±.123	.0000±.111	1.728	83	0.088

**p = .05

Note. The t-test of the null hypothesis, mean change (control) = mean change (treated), was adjusted for 53 covariables by an analysis of covariance (ANOCOVA).

Research Question 2

Will the self-efficacy scores predict behavior changes as reflected in the HRA?

Self-efficacy scores predicted four of the eight specific behavior changes investigated. The behavior changes were in three areas: diet and nutrition (Appendix G, Illustration 1), exercise and physical fitness (Appendix G, Illustrations 5 and 6), and tobacco use (Appendix G, Illustration 7). Subjects who desired to increase fiber in their diet did so ($t = 2.393$; $df = 61$; $p = .020$). Subjects who believed they had the ability to improve muscle strength by increasing the frequency of muscle

Table 3

Physiological Measures

	Control Group								Treatment Group							
	Pretest				Posttest				Pretest				Posttest			
Measure	Range	Mean	Mode	SD	Range	Mean	Mode	SD	Range	Mean	Mode	SD	Range	Mean	Mode	SD
Systolic Blood Pressure	92-152	119	110	12.28	60-94	120	120	10.67	98-174	123	120	15.62	90-152	122	100	14.26
Diastolic Blood Pressure	60-94	77	80	8.81	64-104	76	80	8.53	58-104	78	80	12.00	60-101	79	80	9.53
Total Cholesterol	107-290	184	147	40.95	92-318	184	149	47.82	116-297	177	202	48.15	105-310	184	136	41.37
Weight*	99-270	170	203	43.22	114-263	172	155	32.29	87-240	175	200	40.16	93-277	175	195	34.06

*7 pounds were subtracted from each subject to allow for uniform and boot weight

strength exercise did, in fact, increase the frequency of their muscle strength exercise (t = -2.261; df = 76; p = .027). Subjects who believed they could change their exercise habits to include 20 minutes of aerobic activity at least three times a week did (t = -2.210; df = 65; p = .031), subjects who believed they could decrease their tobacco use showed a significant decrease in the number of cigarettes smoked per day (t = -3.020; df = 12; p = .011). No significant changes in physiological measurements were noted.

The findings shown in Appendix G, Illustrations 4 through 7, indicate that desire and perceived ability to change a behavior did not always correspond. Desire sometimes was the predictor of change, and perceived ability at other times was the predictor. The subjects who desired to increase fiber in their diet did so, but there was no correlation between perceived ability to increase fiber and an actual increase. However, perceived ability was the predictor of the other significant findings--increased frequency of aerobic activity, increased frequency of strength exercises, and a decrease in the number of cigarettes per day.

CHAPTER V

Summary, Discussion, Conclusions, and Recommendations

Presented in Chapter V are the summary, discussion, conclusions, and recommendations of the study. Implications for nursing are included under recommendations.

Summary

The purpose of this study was threefold: (a) to ascertain if the Army's HRA and its subsequent risk and behavioral evaluation has an effect on health behaviors and physiologic measures; (b) to ascertain if the Army's HRA, subsequent risk and behavioral evaluation, and a health promotion seminar have an effect on health behaviors and physiologic measures; and (c) to ascertain if self-efficacy is a predictor of positive behavior changes. The research questions were as follows:

1. Will the treatment group that completes the HRA and attends the health promotion seminar show a greater positive change in self-reported data and physiologic measures than the control group that only completes the HRA?

2. Will the self-efficacy scores predict behavior changes as reflected in the HRA?

The design of this study was a quasi-experimental pretest-posttest design. Subjects were 141 Alabama Army National Guardsmen. Sixty-three of the subjects were included in the control group, and 78 subjects were in the treatment group. All subjects participated in completing the pretest HRA and the self-efficacy questionnaire. The treatment group also participated in a 4-hour health promotion seminar on diet and nutrition, exercise and physical fitness, stress management, smoking cessation, alcohol and drug abuse, and seat belt safety.

The independent variables for the study were the health promotion seminar and the self-efficacy scores. The dependent variables were the HRA self-reported data, and the physiologic measures of blood pressure, total cholesterol, and weight.

The dependent data were analyzed using ANCOVA statistical testing. The treatment group differed significantly from the control group ($p = .05$) at the 3-month follow-up in only one behavioral area, stress. The treatment group decreased their work stress over the study period more than the control group ($p = .019$). Other differences were also noted in the two groups in diet and nutrition; however, the findings were not significant at the .05 level. The treatment group approached statistical significance in decreased dietary fat intake ($p = .079$) and increased frequency of eating well balanced meals ($p = .088$) when compared to the control group. No other behavioral differences were noted, and no differences were

noted between groups in the physiological measurements of blood pressure, total cholesterol, and weight.

Self-efficacy scores predicted behavior changes in three areas: diet and nutrition, exercise and physical fitness, and tobacco use. Subjects who desired to increase fiber in their diet did so (p = .020). Subjects who believed they had the ability to improve muscle strength by increasing the frequency of muscle strength exercise increased the frequency of their muscle strength exercise (p =.027). Subjects who believed they could change their exercise habits to include 20 minutes of aerobic activity at least three times a week did so (p = .031). Subjects who believed they could decrease their tobacco use showed a significant decrease in the number of cigarettes smoked per day (p =.011). Again, no differences were noted in physiological measurements.

Discussion

The health promotion literature indicates that behavioral changes usually occur when subjects complete a HRA and receive subsequent evaluation (Rodnick & Bubb, 1978; Styrd, 1982). When HRA evaluation is coupled with health promotion teaching, behavioral changes are even more likely to occur (Brown et al., 1984; Fielding, 1984; Jose & Anderson, 1986; Kaplan & Burch-Mirakan, 1986; Kelley, 1988; Kelley et al., 1991; Kroenfeld et al., 1988; Robbins et al., 1987; Spilman et al., 1986). Even though some changes were evidenced in the present study in subjects who completed HRAs and received health promotion teaching, the

results were not as impressive as found in the literature. One reason for this might be that the subjects were instructed to participate in the study; participation was not voluntary as in previous reports in the literature. Also, no interpretation of the HRA evaluation letters was given to the subjects.

Self-efficacy scores have been reported to be valid predictors of behavior changes (Anderson & Anderson, 1990; Baer & Holt, 1986; Berrier & Avard, 1986; Burling et al., 1989; Chambliss & Murray, 1979a, 1979b; DiClemente, 1981; Edell et al., 1987; Forster & Jeffery, 1986; Foxx & Brown, 1979; Leon & Rosenthal, 1984; Nicki et al. 1984; Sallis et al., 1989; Wojcik, 1988). In the present study, self-efficacy scores predicted four of the eight behavior changes listed in the six lifestyle areas. Although this is a 50% prediction rate, it is not as reliable a predictor as indicated in the literature. However, in the literature self-efficacy was used as a predictor of lifestyle behavior changes in single intervention health promotion programs only, not in comprehensive health promotion programs. Thus, self-efficacy scores were used to predict only one lifestyle behavior change in each study.

The two components of self-efficacy, desire and perceived ability to change, often did not receive corresponding scores. Some subjects desired to change a behavior but did not think they had the ability to change, and others believed they had the ability to change a behavior but did not have the desire. Thus, desire was

predictive of certain behavior changes, and perceived ability was predictive of other behavior changes. This discrepancy in findings has not been addressed in the literature.

Even though few behavior changes were noted as a result of the health promotion teaching and HRA evaluation letter, other changes might occur later. Change occurs slowly, often long after one realizes the need for change, so other changes might yet occur as a result of the seminar and evaluation letter. Also, multiple changes take even longer to occur since one rarely changes several behaviors at once, so individuals with several at-risk lifestyle behaviors might make changes slowly over several months or years.

Conclusions

From this study, it is concluded that a 4-hour health promotion seminar in conjunction with the Army's HRA evaluation letter effects limited, but significant, change in one's lifestyle behaviors. Stress management techniques were discussed in the seminar and stress management information was disseminated to the treatment group, so perhaps cognitive coping strategies were the key to the reduced work stress in the treatment group. Attention to dietary fat and well-balanced meals also appeared to effect dietary changes somewhat. Treatment group subjects tended to report lower dietary fat intake and increase their well-balanced meal consumption during the 3-month study period.

Self-efficacy scores are predictive of certain behavior changes. In this study self-efficacy scores predicted certain behavior changes in three areas: diet and nutrition, exercise and physical fitness, and smoking cessation. Subjects who desired to increase fiber in their diets did. Subjects who believed they had the ability to improve muscle strength by increasing the frequency of muscle strength exercises increased the frequency of muscle exercises. Subjects who believed they could change their exercise habits to include 20 minutes of aerobic activity at least three times a week did so. Subjects who believed they could decrease tobacco use showed a significant decrease in the number of cigarettes smoked per day. Thus, if one desires to make a certain behavior change and believes the ability to make the behavior change, behavior change will likely occur.

Recommendations

On the basis of the research study, the following recommendations are made for nursing research, nursing education, and nursing practice.

Nursing Research

Recommendations for nursing research are as follows:

1. The study be replicated with different populations.

2. The study be replicated with a second treatment group that receives not only health promotion teaching and HRA evaluation letters, but counselling/interpretation of the evaluation letters as well.

3. Longitudinal studies be conducted with follow-up at one year intervals.

Nursing Education

Nursing education is based largely on health promotion and disease prevention, but it would be worthwhile to teach nurses how to conduct health promotion seminars. Since health promotion seminars and activities are becoming increasingly popular and important in our society, nurses need to attain the knowledge and skills necessary to conduct health promotion programs. Other professions are currently conducting the vast majority of health promotion programs, but there is no reason nursing cannot do this with proper training and skills, management training included. Nursing curricula, at least on the graduate level, should include the theory and skills required for health promotion program planning, implementation, and evaluation. Also, self-efficacy theory should be taught as a useful framework for health promotion programs.

Nursing Practice

It is recommended that nurses become more involved in health promotion teaching, regardless of their work setting. Nurses are well equipped to teach individuals about proper lifestyle behaviors that will improve one's quality of life. Nurses should also seize the opportunity to conduct health promotion programs in the community, in industries, in schools, and in other appropriate settings. Nursing should become the leader in the health promotion movement.

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Appendix A

Health Risk Appraisal Items

HEALTH RISK APPRAISAL ITEMS

Diet and nutrition

Item 20. How often do you eat high fiber foods such as whole grain breads, cereals, bran, raw fruit, or raw vegetables?

Item 21. How often do you eat foods high in saturated fats such as beef, hamburger, pork, sausage, butter, whole milk, cheese, etc.?

Item 22. Do you usually salt your food before tasting?

Item 37. How often do you eat two well-balanced meals per day?

Item 38. How often do you eat foods high in salt or sodium such as cold cuts, bacon, canned soups, potato chips, etc.?

Exercise and physical fitness

Item 18. How often do you do exercises that improve muscle strength, such as pushups, sit ups, weight lifting, a Nautilus/Universal workout, resistance training, etc.?

Item 19. How often do you do at least 20 minutes of non-stop aerobic activity (vigorous exercise that greatly increases your breathing and heart rate such as running, fast walking, biking, swimming, rowing, etc.)?

Stress

Item 39. I am satisfied with my present job assignment and unit.

Item 40. What causes the biggest problem in your life?

Item 42. In general, how satisfied are you with your life (e.g., work situation, social activity, accomplishing what you set out to do)?

Item 43. How often are there people available that you can turn to for support in bad moments or illness?

Item 44. How many hours of sleep do you usually get at night?

Item 46. How often do you have any serious problems dealing with your husband or wife, parents, friends, or with your children?

Item 51. How often are you able to find times to relax?

Item 52. How often do you feel that your present work situation is putting you under too much stress?

Smoking and Tobacco

Item 53. How many cigars do you usually smoke per day?

Item 54. How many pipes of tobacco do you usually smoke per day?

Item 55. How many times per day do you usually use smokeless tobacco?

Item 57. How many cigarettes a day do you smoke?

Alcohol

Item 28. How many drinks of alcoholic beverages do you have in a typical week?

Seat Belt Use/Safety

Item 25. What percent of the time do you usually buckle your safety belt when driving or riding?

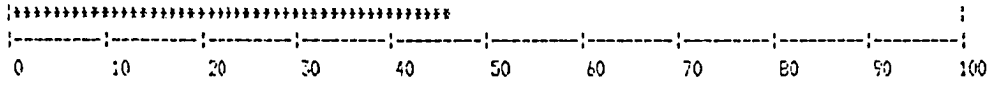
Appendix B

Computerized Evaluation

HQ STARC, ALABAMA ARMY NATIONAL GUARD
U.S. Army Health Risk Appraisal Profile
Version A-4.0
PRIVACY ACT APPLIES

Based on your current health and safety practices, your Wellness Score is 46.
By reducing your risk factors, it's possible to score 100 points.

YOUR SCORE = 46



Your age	You have the same risks as someone this age: 29	With lifestyle changes you could have the risks of someone this age: 19
20		

THIS REPORT CONTAINS ESTIMATES DUE TO MISSING ITEMS, INCLUDING THE FOLLOWING:
HDL Cholesterol.

Many serious injuries and health problems can be prevented. Your Health Risk Appraisal lists factors you can change to lower your risk.

MOST COMMON CAUSES OF DEATH	NUMBER OF DEATHS IN NEXT 10 YEARS FOR 1000 MEN AGE 20			TYPICAL MODIFIABLE RISK FACTORS
	YOUR RISK AS YOU NOW ARE:	YOUR RISK IF YOU MAKE CHANGES	U.S. AVERAGE RISK:	
Motor Vehicle Crash	23	4	5	Reduce Speeding, Wear Seat Belts
Homicide	3*	3*	3	Avoid Drug/Alcohol Use and Handguns
Suicide	3*	3*	3	Get Help from a Health Professional if Needed
Other Injuries	2*	2*	2	Avoid Alcohol Use and Observe Safety Rules
Heart Attack	1	<1	<1	Don't Smoke
All Other	6	5	6	
TOTAL:	36	17	19	Deaths in Next 10 Years Per 1,000 MEN, Age 20

* = Average Value Used

GOOD HABITS	TO IMPROVE YOUR RISK PROFILE:	RISK YEARS GAINED
+ You don't use smokeless tobacco	- Reduce driving speed to legal limit	5.06
+ Low alcohol risk	- Always wear your seat belts	4.65
+ Weight is not over desirable range	- Quit smoking	0.16
+ Safe cholesterol level		
+ Safe blood pressure level		

Blood pressure: 122/80 Cholesterol: 105 Total Risk Years you could gain = 9.87

DA FORM 5676-E:1 OCT 90 SSN: [redacted] Name: [redacted] Unit Code = INTERX

DIETARY FIBER:
Eating high fiber foods greatly reduces your risk of certain cancers. Fiber should be part of any balanced diet. Examples of high fiber foods are: whole grain cereals and breads, fruits, and some vegetables like broccoli, peas and beans.

YOU DO AEROBIC EXERCISE ONCE OR TWICE A WEEK
Your body needs only 20 minutes of aerobic exercise 3 times a week. Neglecting exercise has high personal costs. (To be aerobic, an activity must increase your breathing and heart rate for 20 continuous minutes. Examples are: walking, biking, swimming or running.)

YOU SMOKE 15 CIGARETTES A DAY:
Smoking is a serious threat to your health. It puts you at serious risk of heart disease, sudden death, and cancer. It may also hinder your ability to perform at your personal best. Smoking can be a habit that is difficult to break. Quitting is the only wise choice.

GOOD CHOLESTEROL LEVEL:
Since cholesterol is an important indicator of health, you are to be congratulated on having a reading in the ideal range (below 200). You can keep it at a safe level by limiting fat and cholesterol in your diet and by exercising regularly.

FAILURE TO USE A SEAT BELT (15% use):
Each year automobile accidents kill and cripple tens of thousands of people. It is the number-one cause of death for people under 40. By wearing seatbelts all the time you will greatly decrease your chance of serious injury or death.

EXAMINE YOUR TESTICLES MONTHLY:
Testicular cancer is the most common type of cancer in men ages 20-35. By examining your testicles (sex organs) each month, you can detect any problem early, while it can be treated most effectively. Ask your health care provider for details, if you are not sure how to properly do this exam.

Appendix C

The Self-Efficacy Tool

SELF-EFFICACY TOOL

1. Do you want to decrease the fat in your diet?

   YES NOT SURE NO ALREADY ON A LOW FAT DIET

2. How confident are you that you will be able to decrease the fat in your diet by decreasing consumption of hamburger, butter, whole milk, cheese, bacon, fried foods, etc?

   DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT.

3. Do you want to decrease your salt intake?

   YES NOT SURE NO ALREADY ON A LOW SALT/SODIUM DIET

4. How confident are you that you will be able to decrease your salt intake by salting your food less and decreasing your intake of salty foods such as chips, processed meats, bacon, etc?

   DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

5. Do you want to increase the amount of fiber in your diet?

   YES NOT SURE NO ALREADY EAT FIBER EVERY DAY

6. How confident are you that you can increase the fiber in your diet by eating more whole grain breads, cereals, bran, raw fruit or raw vegetables?

   DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

7. Do you want to improve your muscle strength?

   YES NOT SURE NO MUSCLE STRENGTH IS ALREADY VERY GOOD

8. How confident are you that you can improve your muscle strength by doing exercises such as pushups, weight lifting, a Nautilus/Universal Workout, resistance training, etc., three times each week?

   DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

9. Do you want to improve you heart and lung fitness by improving you aerobic exercise habits?

   YES NOT SURE NO ALREADY DO AEROBIC EXERCISES AT LEAST 20 MIN. 3 TIMES EACH WEEK

10. How confident are you that you will be able to change your exercise habits to include 20 minutes of non-stop activity such as brisk walking, jogging, swimming, cycling, etc. to at least three times a week?

    DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

11. Do you want to reduce your level of stress?

YES NOT SURE NO I ALREADY HAVE A LOW LEVEL OF STRESS

12. How confident are you that you can reduce your level of stress by talking about your problems to a friend or counselor, exercising, using relaxation techniques, etc.?

DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

13. Do you want to decrease you smoking, chewing, or dipping tobacco?

YES NOT SURE NO DON'T USE TOBACCO

14. How confident are you that you can decrease your smoking, chewing, or dipping tobacco?

DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

15. Do you want to cut down on your alcohol consumption to three or less drinks per week?

YES NOT SURE NO DON'T DRINK ALCOHOL OR DON'T DRINK OVER 3 ALCOHOLIC DRINKS PER WEEK

16. How confident are you that you can cut down on your alcohol consumption to three or less drinks per week?

DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

17. Do you want to wear safety belts every time you drive or ride in a vehicle?

YES NOT SURE NO ALREADY WEAR SEAT BELTS EVERYTIME I DRIVE OR RIDE

18. How confident are you that you can wear safety belts every time you drive or ride in a vehicle?

DEFINITELY CANNOT DO IT PROBABLY CANNOT MAYBE PROBABLY CAN DEFINITELY CAN DO IT

(June.doc)

Appendix D

Institutional Review Board Approval Form

The University of Alabama at Birmingham
Institutional Review Board for Human Use
205/934-3789
Telex 888826 UAB BHM

FORM 4: IDENTIFICATION AND CERTIFICATION OF
RESEARCH PROJECTS INVOLVING HUMAN SUBJECTS

THE INSTITUTIONAL REVIEW BOARD (IRB) MUST COMPLETE THIS FORM FOR ALL APPLICATIONS FOR RESEARCH AND TRAINING GRANTS, PROGRAM PROJECT AND CENTER GRANTS, DEMONSTRATION GRANTS, FELLOWSHIPS, TRAINEESHIPS, AWARDS, AND OTHER PROPOSALS WHICH MIGHT INVOLVE THE USE OF HUMAN RESEARCH SUBJECTS INDEPENDENT OF SOURCE OF FUNDING.

THIS FORM DOES NOT APPLY TO APPLICATIONS FOR GRANTS LIMITED TO THE SUPPORT OF CONSTRUCTION, ALTERATIONS AND RENOVATIONS, OR RESEARCH RESOURCES.

PRINCIPAL INVESTIGATOR: Betty Reeder Barfield

PROJECT TITLE: Evaluation of the Effects of Health Risk Appraisals and Health Promotion Teaching on Lifestyle Behaviors

---

_____1. THIS IS A TRAINING GRANT. EACH RESEARCH PROJECT INVOLVING HUMAN SUBJECTS PROPOSED BY TRAINEES MUST BE REVIEWED SEPARATELY BY THE INSTITUTIONAL REVIEW BOARD (IRB).

__X__2. THIS APPLICATION INCLUDES RESEARCH INVOLVING HUMAN SUBJECTS. THE IRB HAS REVIEWED AND APPROVED THIS APPLICATION ON 3-15-91 IN ACCORDANCE WITH UAB'S ASSURANCE APPROVED BY THE UNITED STATES PUBLIC HEALTH SERVICE. THE PROJECT WILL BE SUBJECT TO ANNUAL CONTINUING REVIEW AS PROVIDED IN THAT ASSURANCE.

__X__ THIS PROJECT RECEIVED EXPEDITED REVIEW.

_____ THIS PROJECT RECEIVED FULL BOARD REVIEW.

_____3. THIS APPLICATION MAY INCLUDE RESEARCH INVOLVING HUMAN SUBJECTS. REVIEW IS PENDING BY THE IRB AS PROVIDED BY UAB'S ASSURANCE. COMPLETION OF REVIEW WILL BE CERTIFIED BY ISSUANCE OF ANOTHER FORM 4 AS SOON AS POSSIBLE.

_____4. EXEMPTION IS APPROVED BASED ON EXEMPTION CATEGORY NUMBER(S)_____.

DATE: 3-15-91

RUSSELL CUNNINGHAM, M.D.
INTERIM CHAIRMAN OF THE
INSTITUTIONAL REVIEW BOARD

Appendix E

Letter to Chief-Of-Staff

March 1, 1991

Col. Joseph Faircloth, Chief-of-Staff
Alabama Army National Guard
Military Department
William Dickenson Drive
Montgomery, Alabama

Dear Col. Faircloth,

I am writing to request permission to conduct a research study at four national guard units in the state. The study is part of the requirements for my doctoral degree. I need the units to commit to two days of study, 3 months apart.

All the guardsmen at the units will complete a health risk appraisal (HRA), and half the guardsmen will also attend a brief health promotion seminar. Also, all guardsmen will be tested for blood pressure, cholesterol, height, and weight. I will conduct the seminar and provide research assistants to conduct the testing. HRA evaluation letters will be given to all participants.

The initial HRA completion, physiological testing, and seminar will take one day. The 3-month follow-up HRA completion and physiological testing will take approximately 3 hours. I will conduct the study at the convenience of the units and would like to begin as soon as possible.

I appreciate your support of my academic endeavors and hope you will agree favorably to this request.

Sincerely,

Betty Barfield

Appendix F

Information Provided During the Seminar

DIET AND NUTRITION

BASIC 4 FOOD GROUPS

1. Fruit and vegetable - 4 per day
2. Bread and Cereal (whole grain and enriched) - 4 per day
3. Milk and milk products - 2 per day
4. Meats, fish poultry, eggs and legumes (dry peas and beans) - 2 per day

Limit saturated fats, sugar and salt in your diet.
Increase fiber in your diet.

DETERMINE DAILY CALORIE INTAKE

1. If you are minimally active (sedentary lifestyle) you need 12 calories per pound of ideal body weight.
2. If you are moderately active (exercise equivalent to 3 times per week) you need 15 calories per pound of ideal body weight.
3. If you are very active (strenuous activity or exercise equivalent to 5 times or more per week) you need 18 calories per pound of ideal body weight.

EXAMPLE

A moderately active female wants to maintain her weight at 125 pounds.

125 (Ideal Body Weight)
x15 (Calories needed per pound)
1,875 (Calories needed per day)

WHERE SHOULD YOUR CALORIES COME FROM?

1. 50% of calories should come from carbohydrates (complex carbohydrates such as whole grains, fruits and vegetables, not white bread, white flour or table sugar; also use lowfat milk).

2. 30% of calories should come from fat (polyunsaturated fats, not saturated, which means avoid hardened margarine and shortening. Avoid animal fats, coconut oil and palm oil. Eat liquid vegetable fats, i.e. safflower oil.)

3. 20% of calories should come from protein - meat, fish, poultry, eggs. (Sausage and bacon are considered fats, not protein. Processed meats are high in fat, high in sodium, and low in protein. Limit red meat and eggs to 2-3 servings per week.)

3,500 calories = 1 pound

- To lose 1 pound per week decrease caloric intake by 500 calories each day.

- Don't restrict calories to less than 1000 per day because it will decrease your metabolic rate, which means your body slows down the process of using food in order to avoid starvation. This means it will actually take you longer to lose weight, plus it will cause an electrolyte imbalance, and you won't take in enough nutrients.

SIX (6) ESSENTIAL NUTRIENTS

1. Protein - Primary function is to repair and build tissue.

2. Fat - Provides essential fatty acids; primary source of calories.

3. Carbohydrates - Primary source of energy for brain and nervous system.

4. Minerals - Helps build blood, bones, teeth, and aid vital body functions.

5. Vitamins - Help food to be used properly and aids in healthy functioning of body.

6. Water - Helps cool down body by evaporation; main component of blood; transports waste products for elimination.

Limit cholesterol intake to no more than 300 mg per day. (See "Facts About Cholesterol" handout.)

Your metabolic rate decreases by 4% every 10 years, so decrease your food intake accordingly as you get older.

FACTS ABOUT CHOLESTEROL

Cholesterol's most important job is to help carry fat through your blood vessels, since fat can't travel through blood vessels alone. However, if you eat too much fat, too much cholesterol may accumulate causing fatty deposits (called plaque) on the walls of your blood vessels. When this happens, serious problems can occur, mainly heart disease.

Your liver makes most of your body's cholesterol to help carry fat to parts of your body that need fat for energy and repairs, or to fat storage sites such as your hips or stomach. Also, some cholesterol in your body comes from eating high cholesterol foods such as eggs, red meat (especially organ meats), and milk products (butter, cheese, ice cream, etc...).

Everyone needs to know what their cholesterol level is. If your level is under 200, that means you have a desirable cholesterol level. If your level is 200 to 239, that means you have a borderline high level and you may be at increased risk for heart disease. You need to have a follow-up test within a month to confirm the results and you need to go on a low cholesterol diet and exercise program. Then you need to be re-screened in 6 months to determine the effect of your exercise and diet changes. If your level is 240 or higher, you have a high cholesterol level and you are definitely at increased risk for heart disease. You need to go to your doctor to have a more complete cholesterol test (one that will determine your good and bad cholesterol levels), and you need to go on a low cholesterol diet and exercise program. You then should be re-screened in 6 months to determine the effect of your diet and exercise program. If your cholesterol level remains very high after dietary and exercise changes your doctor may put you on medication to reduce your cholesterol level.

What is a low cholesterol diet? It is a special diet that is probably the most effective way to lower or maintain your cholesterol at a desirable level, though it may take a few months to begin to see the results. The most helpful changes you can make is to lower the amount of fat you eat, which includes fried foods, red meats, processed meats, sausage, bacon, whole milk products, etc. Be sure to limit saturated fats (those that are solid at room temperature) and animal fats, because they do the most damage. A low cholesterol/healthy heart diet plan is outlined below:

EAT LESS FAT

Many of us eat almost half our daily calories in fat--and our bodies respond by making more cholesterol. Your goal is to limit fats to less than one-third of your total calories. Do this by avoiding "obvious" fats such as butter and "hidden" fats used in processed foods.

EAT MORE FIBER

One kind of fiber (soluble fiber) lowers your cholesterol level by keeping the cholesterol you eat from being absorbed by your body. Oats, beans, and fruit are rich in soluble fiber.

EAT LESS CHOLESTEROL

Eating high-cholesterol food may raise your cholesterol level. Limit your use of high-cholesterol food such as eggs and meat, especially organ meats.

EAT MORE STARCHES

Starches (complex carbohydrates) aren't fattening and can lower your cholesterol level by "diluting" the fat you eat. Eat more starches such as grains, beans, and root vegetables.

DRINK LESS CAFFEINE AND ALCOHOL

Both caffeine and alcohol can raise your cholesterol level by raising the fat levels in your blood. Try to limit yourself to no more than two cups of coffee and two alcoholic beverages each day.

OTHER FACTS

Along with changing your diet, there are other steps you can take to help lower your cholesterol level: lose extra weight, exercise regularly, and reduce your other heart risks. Other heart risks that you can reduce are smoking, high blood pressure, and too much stress. If you do not alter your lifestyle positively by changing your diet, loosing extra weight, exercising regularly, and reducing your other heart risks, you may well develop irreversible, even fatal, heart disease.

BE SURE TO HAVE YOUR CHOLESTEROL LEVEL RE-CHECKED PERIODICALLY AND BEGIN LEADING A HEALTHIER LIFESTYLE

EXERCISE/PHYSICAL FITNESS

If you are not physically fit and want to begin an exercise program, you should avoid patential risks by taking the following precautions:

1. Build up your level of exercise gradually. Too often new exercisers try to makeup for many years of inactivity in one week and end up with an injury that prevents them from exercising at all.

2. Proper stretching reduces chance of injury by improving the flexibility of the joint. It can take pressure off tendons by increasing the length of the resting muscle. Stretch for 5-10 minutes before and after you exercise.

3. Strengthening the muscles allows them to be more resistant to bodily traums (such as twisting an ankle, breaking a fall, etc.) Keep in mind that you don't need access to an actual set of weights in order to increase your strength. Push-ups, sit-ups, even things like regular yard work (push mowing, raking, etc.) require the muscles to work harder than at rest and can result in muscle strength gain.

4. When exercising in hot weather be sure to wear proper clothing and make sure that you take in plenty of water (drink more than you're thirsty for!). Drink at least 10 oz. of water before starting your workout. Reduce you distance and/or pace insevere heat. Sometimes a work out can do you more harm than good if you aren't careful.

5. R.I.C.E. The basic formula for treating an injury to the muscles or joints is REST, ICE, COMPRESSION, and ELEVATION applied immediately after injury. In severe cases, and if pain and if pain and swelling persist, seek help from a physician.

You will need to exercise at your target heart rate (THR) at least 3 times a week for 20-30 minutes sessions for the exercise program to benefit your heart and lungs. You should perform aerobics activities. The following steps will help you determine your target heart rate (THR).

1. First start with your predicted maximum heart rate (MHR):

220 minus your age for males

225 minus your age for females

2. Then your resting heart rate (RHR) while sitting at rest during a relaxed state. To be accurate take it several times during a 3 day period and use the lowest value. Subtract your RHR from your MHR.

3. Next you should select one of the following 4 categories that most appropriately desscribes you and your exercise habits. Use that percentage in calculating your THR.

Fitnes/Activity Level	Percentage
* Extremely poor condition or have an otherwise limiting factor for a three month period.	50%
* Healthy, but sedentary individual just beginning an exercise program.	60%
* Individual who has participated in a regular exercise program for at least 3 months at 60% with no problems.	70%
* Individual who has participated in a regular exercise program for at least 6 months and has progressed through a level of 70% with no problems.	80%

4. Once you have selected your percentage level, multiply it by the difference between MRH and RHR. The last step is to add back the RHR. This gives you your target heart rate for exercise. Set your pace/intensity so that you are exercising within +/-5 beats of your target heart rate. If you are on medication that alters your heart rate, consult your physician before calculating your heart rate.

5. Check your pulse rate 10 minutes into your workout. Continue to move as you take this measurement. Place the tip of your third finger (never the thumb) lightly over one of the blood vessels in your neck (carotid arteries) located to the left or right of your Adam's apple. Another convenient pulse spot is the inside of your wrist just below the base of your thumb.

6. Count your pulse for 10 seconds and multiply by 6.

7. If your pulse is below your target zone, increase your pace. If you're above your target zone, exercise a little easier and if it falls within the target zone, you're doing fine. Recheck in 10-15 minutes and at completion of exercise.

EXAMPLE

A 35 year old sedentary man in good health. RHR of 72 and just beginning a exercise program.

220
- 35
185 (MHR)
- 72 (RHR)
113
x.60 (%)
68
+ 72 (RHR)
140

This man should be exercising at a heart rate of 135-145 beats per minute.

CAUTION

Formulas based on predicted maximum heart rate should not be used to determine training heart rates for persons with heart disease, suspicious symptoms of heart disease, or who are taking medication that lowers heart rate such as beta blocking agents (propranolol or similar drugs prescribed for hypertension or heart disease.) Consult your physician for guidance.

EXERCISE: TEST YOUR KNOWLEDGE

1. To determine your training heart rate zone within which you must exercise to improve cardiovascular endurance, multiply your maximum heart rate by 70 and 85 percent. If you have no medical problems and are younger than 35, you can estimate your maximum heart rate by subtracting your age from:

A. 340

B. 250

C. 220

D. 100

2. Benefits of aerobic exercise include increased endurance, decreased body fat, lower blood pressure at rest, and favorable shifts in blood cholesterol among others. To achieve them, you must maintain your heart rate within your training zone for at least:

A. One hour every other day

B. Forty-five minutes once a week

C. Five minutes four days a week

D. Fifteen minutes three days a week.

3. Aerobic exercise achieves all the following, except:

A. Increased appetite

B. Relief of mild depression

C. Better control of blood sugar

D. Decreased risk of osteoporosis--the bone tinning disease

EXERCISE: TEST YOUR KNOWLEDGE (Cont.)

4. Which activity would burn the most calories?

A. Bicycling at 5 mph

B. Jogging at 5 1/2 mph

C. Swimming laps

D. Tennis singles

E. Walking at 4 1/2 mph

5. For the average tennis player, which fluid would best replace the pound or two of fluid lost through sweat during a vigorous match?

A. Water with an added teaspoon of salt

B. Plain water

C. A sugar drink

D. Commercial mixture with electrolytes

STRESS MANAGEMENT

STRESS - How the body and mind responds to demands and situations. Stress can be good (such as excitement after a promotion) or bad (such as severe headaches after family arguments).

STRESSORS - Any situation or demand (real or imagined) which causes you to adapt or change. Below are a list of some common stressors.

EXTERNAL STRESSORS

* Traffic
* Noise
* Overcrowding
* Extremes in temperatures
* Excess caffeine, nicotine

JOB STRESSORS

* Work deadlines
* Time pressures
* Job ambiguity
* Work overload
* Boredom and inactivity
* Promotions/Demotions
* Giving/receiving negative feedback
* Dealing with angry/aggressive people

PERSONAL/SOCIAL STRESSORS

* Family problems (interpersonal)
* Illness (self or family)
* Fatigue
* Friction with others
* Prolonged worry
* Increased mobility
* Changing roles
* Financial problems
* Sexual problems
* School

SELF-TALK STRESSORS

* Self-imposed demands
* Personal performance
* Expectations
* 'Shoulds', 'Musts', 'Oughts'
* Personal myths and beliefs

Stress becomes a problem when it:
1) occures too often
2) is too intense
3) lasts too long

Stress manifests itself in many ways. Some common ways include:

* Irritation with slow drivers.
* Interrupting others to finish their sentences.
* Anguish at waiting in line.
* Impatience with repetitive duties.
* Thinking or doing more than one thing at a time.
* Continually turning the conversation to one's interests.
* A belief that success is due to working faster and harder than others.
* A belief that there is not enough time to complete all the things worth doing.
* Difficulty in sitting and relaxing.
* Not noticing interesting things in the environment.
* Not experiencing much delight in life.
* Ceaseless, joyless striving in all tasks.
* Being easily provoked.

Signals that let you know you are experiencing stress include:

PHYSICAL

Tense muscles
Stiff neck and shoulders
Headaches
Backaches
Tight or fluttery stomach
Pounding or racing heart
Rapid pulse
Elevated blood pressure
Shortness of breath
Increased perspiration
Cold hands and/or feet

EMOTIONAL

Worrying
Apanthy
Depression
Can't get the job done
Lack of concentration
Desire to cry or run away
Loss of self-confidence
Anxiety, fear, panic
Irritability or edginess
Frequent anger
Frustration
Boredom

BEHAVIORAL

Change in appetite
Change in sleep pattern, sexual functioning.
Change in use of alcohol, tobacco, drugs
Forgetfulness
Accident proneness
Crying, yelling, blaming
Nail biting, teeth grinding
Decline in productivity
Absenteeism
Avoiding others
Change in personal appearance

How do you deal with stress? Do you yell, argue, throw objects, isolate yourself, cry, eat too much, drink too much alcohol, or do you deal with stress in the following ways:

Exercise
Hobbies
Relaxation, especially progressive muscle relaxation
Positive attitude and life-style
Good nutrition
Adequate rest and sleep
Socialize with friends
Avoid hassles and stressful situations
Visual imagery
Massage
Stretching exercises
Deep breathing exercises
Biofeedback

You might want to try these additional stress management strategies:

1. Change commuting patterns. Use music, or relaxation tapes in car.
2. Avoid exposures to stressors (traffic, caffeine, and smoke).
3. Check chairs, desk and workplace for correct fit.
4. Regulate extremes of temperature, lighting, and noise.
5. Learn to deal with aggressive personalities.
6. Avoid continuous interruptions.
7. Anticipate and prepare for change.
8. Leave the situation (take breaks, go out for lunch, take yearly vacations).
9. Change your negative selftalk and irrational thinking.

10. Examine your personal performance expectations.

11. Work on raising your selfesteem.

12. Learn to communicate effectively; practice active listening and assertiveness.

13. Practice anger management.

14. Identify and eliminate your anxiety-producing beliefs.

15. Practice the 'three C's' for thinking about and coping with stress: Control, Challenge and Commitment.

The following beliefs are irrational and underlie many of our anxieties. If you adhere to any of these beliefs you should work on eliminating or modifying them.

1. It is necessary that we be loved by everyone, and everyone must approve of everything we do..

2. We must be perfectly competent, adequate, intelligent, and successful in all things in order to consider ourselves worthwhile.

3. Certain people are evil or inept, and should not be that way. They should be blamed and punished.

4. It is a terrible catastrophe when things don't go the way we think they should.

5. Unhappiness is caused by external events, and we have little ability to control or change our feelings about these events.

6. If something is or may be dangerous or fearsome, we should be terribly concerned about it and should constantly dwell on it until it passes.

7. It is easier to avoid life's difficulties and responsibilities then to face them.

8. The influence of the past must affect our present behavior and cannot be overcome.

9. There is always a perfect solution to a problem and it is a catastrophe if this 'perfect' solution is not found and applied precisely.

10. Maximum pleasure comes from always relaxing and enjoying yourself.

11. When others disapprove of us, it invariably means we are wrong or bad.

12. Our worth as human beings depends on how much we achieve or produce.

13. In order to consider ourselves worthwhile, we must be better (smarter, more productive, etc..) than those around us.

LIST YOUR BIGGEST STRESSORS:

HOW DO YOU KNOW YOU ARE EXPERIENCING STRESS?

HOW DO YOU DEAL WITH YOUR STRESS?

HOW WOULD YOU LIKE TO DEAL WITH YOUR STRESS?

Remember, you can manage your stress by learning to recognize your own personnel stressors and stress signals, and then responding to the stress in a predetermined way.

SMOKING

Nicotine is addictive and harmful.

- When smoking, tar collects in lungs and causes respiratory problems.

- Smoking releases carbon monoxide which takes the place of oxygen in the blood and causes cardiovascular problems; it increases pulse and increases blood pressure.

- 90% of lung cancer is caused by smoking.

- 25% of heart attacks are attribute to smoking.

- 99% of emphysema is caused by smoking.

- Smokers are 10 times more likely to develop cancer of the mouth and windpipe.

- Smokers are 7 times more likely to develop cancer of the pancreas and bladder.

- Smoking causes bronchitis, peptic ulcer, miscarriages, low birth weight babies, cancer, and heart disease.

- Passive smoking is as dangerous as active smoking.

- When you stop smoking there is more oxygen in the blood, sleep is improved, headaches cease, stamina increases, stomach problems decrease, and smell and taste improve.

- When you stop smoking your likelihood of a heart attack is decreased by 25% in one year.

- 10 years after you stop smoking your risks of health problem is the same as other non-smoker.

SMOKING CESSATION

Did you know?

1. Overall, those who are now smoking have approximately a 70% greater chance of dying from disease than nonsmokers (100% for 2 pack-a-day smokers).

2. Smokers have shorter life expectancy at any given age than do nonsmokers. That difference is greatest among people between the ages of 45 to 64 for both men and women.

3. Cigarette smokers of all ages are nearly twice as likely to die of heart disease such as heart attack.

4. The strongest link between tobacco use and any disease shown is lung cancer. The death rate for this disease among lifetime smokers is 16 times as high as for nonsmokers.

5. Cigarette smoke acts synergistically to increase the damage done by many environmental poisons (asbestos, carbon monoxide, and most industrial carcinogens) and to worsen many diseases such as high blood pressure, high cholesterol and allergies.

6. The disease-causing effect of cigarettes is related to the number and kind of cigarettes smoked.

7. Those who have a pack a day (or less) smoking habit and quit smoking will have the same life expectancy as a nonsmoker within 5 to 10 years.

8. For exsmokers who had smoked more than on pack per day, the risk of death due to heart disease is proportional to the total lifetime exposure to cigarette smoke.

Bad news for women who smoke:

1. Studies indicate that cigarette smoking increases the risk of heart disease among women and that risk increases with the number of cigarettes smoked per day. Women who smoke are 2 to 6 times more likely to suffer a heart attack than nonsmoking women.

2. Pregnant women who smoke are more likely to have stillborn babies, spontaneous abortions, or premature deliveries than are women who do not smoke. Babies born to women who smoke usually are smaller than those born to nonsmoking mothers.

3. The combination of cigarette smoking and the use of birth control pills greatly increases the risk of heart disease among women. Recent studies have shown women smokers who used oral contraceptives were up to 39 times more likely to have a heart attack and up to 22 times more likely to have a stroke than were women who neither smoked nor used birth control pills. Smoking in conjunction with birth control multiplies the rate of heart disease among women.

The risks factors related to heart disease and smoke are:

Smoking
Stress
events
Sedentary life-style
High blood pressure
Diabetes
High cholesterol level
Family history of heart disease
Age (the older, the greater risk)
Gender (male at greater risk)
Race (blacks at greater risk than whites)

If you have more than one risk factor present, your risk of heart disease increases. So if you smoke and have any other risk factor present you have a significantly higher chance of developing heart disease.

How to quit smoking:

1. Make a commitment. Set a target date and stick to it. Let your family and friends know about your intentions; it helps to strengthen your resolve.

2. Make a list of reasons why you want to quit. Refer to it often and add to it throughout your effort to quit.

3. For the three days preceeding your quit-day you should smoke as usual. Record the time and rate you desire a cigarette. (Rank your desire from 1 to 5, 1 being minimal need and 5 being the greatest need). Analyze this data to identify patterns of behavior. Note your CRITICAL times where your response is so automatic that you don't even think about it-these are trigger situations.

4. For each trigger situation (i.e., coffee break, watching T.V., talking on the telephone) develop a plan of action. A good plan of action should include 3 coping strategies: a) an alternative behavior, b) a situation that makes smoking difficult (barrier), and c) a behavior that allows you to avoid the cigarette. An EXAMPLE is:

TRIGGER	COPING STRATEGIES
Coffee Break	a. Eat carrot sticks or other low calorie snake. (Alternative)
	b. Put cigarettes out of reach. (Barrier)
	c. Skip your coffee break that day. (Avoidance of trigger)

5. On your 'quit day' throw away all of your cigarettes, matches, and ashtrays. Put your plan of action to work as each trigger situation arises.

6. If physiological symptoms arise, remember that your body is already beginning its return to a normal state. The symptoms are only temporary and they will go away. In the meantime try deep breathing exercises, get plenty of rest, and drink lots of water.

7. Reward yourself for your success; go see a movie, treat yourself to nutritious, low calorie meal, or buy some flowers.

8. Help yourself maintain your nonsmoking status. Use relaxation exercises (deep breathing), participate in regular aerobic exercise, and eat low-calorie, nutritious foods.

9. If you think a group setting will make quitting easier for you, enroll in a smoking cessation class.

ALCOHOL

- 10 million Americans are alcoholics.
- Alcohol slows reaction time and causes impaired judgement after 2 drinks.
- Drinking a pint or more at one time can cause respiratory failure.
- Your body weight has to do with the amount of alcohol you can drink; usually the more you weigh the more you can drink before becoming intoxicated.
- Alcohol damages the heart, brain, liver, stomach, reproductive system, and circulatory system.
- Alcohol causes cirrhosis of the liver which is the 7th leading cause of death in the U.S.
- Drinkers are more susceptible to peptic ulcers and rectal cancer. Rectal cancer is seen frequently in beer drinkers.
- Alcohol causes increased risk taking.
- You can metabolize 1 ounce of alcohol every 1 1/2 hours, so drink slowly.
- Eat before drinking and while drinking (preferably foods high in fat and protein) because food slows alcohol absorption, taking it longer to get to the brain.
- Alcohol tolerance occurs over time; the longer you drink the more alcohol it takes to make you drunk.
- 2-3 drinks will cause you to test positive on an alcohol test.
- You are 4 times more likely to have a driving accident after 5 drinks.
- You are 100 times more likely to have a driving accident after 10 drinks.
- Typical servings of beer, wine and liquor are equal in alcohol content; 12 ounces of beer = 6 ounces of wine = 1/2 ounces of liquor.

- Switching drinks during an evening will have no effect on your blood alcohol content.

- Alcohol is a vasodilator - it decreases body temperature

- Alcohol is a diuretic - it causes you to lose fluid in your body

- Alcohol decreases sugar level in blood which leads to hypoglycemia

- Alcohol causes weight gain in some people and weight loss in others, both which are usually accompanied by malnutrition

- Alcohol can cause birth defects

- Alcohol can cause impotence

ALCOHOLISM

Rate your behavior:

DO YOU...

1. Need a drink to get over a hangover?	YES	NO
2. Like to drink alone?	YES	NO
3. Lose time from work to drinking?	YES	NO
4. Need a drink at a definite time of day?	YES	NO
5. Find it harder to get along with others?	YES	NO
6. Suffer loss of memory while or after drinking?	YES	NO
7. Find efficiency or drive decreasing?	YES	NO
8. Drink to relieve stress, fear, shyness, insecurity?	YES	NO
9. Find that drinking is harming or worrying the whole family?	YES	NO
10. Become more moody, jealous or irritable after drinking?	YES	NO

If you answered 'YES' to one or more of these questions you should consider alcohol abuse as a potential problem.

RISK FACTORS

Some people are at higher risk than others for becoming alcoholics. If you are in one of the following categories, you have a higher risk of developing an alcohol problem and you should be aware of the danger signs indicating a drinking problem.

1. Family history of alcoholism, especially where strong moral overtones existed in the family.

2. History of teetotalism in family.

3. Coming from a home with much parental discord, particularly where strong moral overtones were present.

4. Having female relatives of more than one generation who have had a high incidence of recurrent depression.

Alcoholism is associated with an increased incidence of cirrhosis of the liver and cancer of the mouth, throat and esophegus. Alcoholics also have increased incidence of pneumonia and brain damage.

STAGES OF ALCOHOLISM - DANGER SIGNS

Early Stages:

1. Makes PROMISES to quit -- but breaks them.
2. Drinks to relieve tensions or to escape problems.
3. Drinks MORE AND MORE for same effect.
4. Has trouble stopping drinking once begun.

Middle Stages:

1. Tries to deny or conceal drinking.
2. Drinks in morning and alone.
3. Drinking becomes a daily necessity.
4. Harder to get "feeling good" regardless of quantity.

Final Stages:

1. Lives to drink. Liquor comes before job or family.
2. Loneliness. Avoids and distrusts people.
3. Loss of ambition. Less efficient. Losses time at work.

WHAT CAN AN ALCOHOLIC DO?

1. Face the Truth that alcohol is ruining his life and that he cannot control his drinking.
2. Want to Stop Drinking for good. Total abstinence is the surest way...an alcoholic can't stop after "just one drink."
3. Get Help from doctors, social workers, "Alcoholics Anonymous" groups. They can provide the moral support needed to get well.

IT IS BEST TO START TREATMENT EARLY.

ALCOHOL TEST

Can you separate myths and misinformation about drinking from the facts? On this test, read each opening. Then choose the ending or endings you think most accurately completes each statement.

1. Typical servings of beer, wine and liquor:

   a) contain the same volume of liquid;

   b) vary in alcohol content;

   c) are equal in alcohol content.

2. Switching drinks during the evening will:

   a) affect you more strongly than staying with one type of drink;

   b) have no effect on your Blood Alcohol Content;

   c) guarantee you'll feel awful the next morning.

3. To slow down the effects of alcohol:

   a) drink more slowly;

   b) eat something substantial beforehand;

   c) snack while you drink.

4. If you're going to a party and want to pace yourself:

   a) drink only liquor;

   b) moderate the amount you drink;

   c) drink only beer or wine.

ALCOHOL TEST (cont.)

5. If you think you've had too much to drink, the best solution is to:

   a) stop drinking and eat something;

   b) wait 30 minutes before your next one;

   c) drink black coffee and go out for some fresh air.

6. If you're trying to lose a few pounds, or like to watch your weight generally, the best approach to drinking is:

   a) switch from beer to wine;

   b) switch from liquor to wine;

   c) count your calories;

7. Labels on beer, wine and liquor:

   a) describe the alcohol 'proof' of the beverage;

   b) list the alcohol content as a percentage of total volume;

   c) vary in the kind of information they give you.

8. When you want to drink 'lightly':

   a) have a white wine;

   b) have either beer or a mixed drink;

   c) be moderate in whatever you choose to drink.

DRUG ABUSE

Rate your drug behavior:

DO YOU...

1.	Find your spouse or friends ever worry or complain about your drinking or drug abuse?	YES	NO
2.	Feel you can get a little extra out of life by occasional drug abuse?	YES	NO
3.	Feel the need to escape, and use drugs or alcohol to do it?	YES	NO
4.	Find a marital, financial, legal or other problem causes you to drink or abuse drugs?	YES	NO
5.	Look forward to having a drink or using drugs after work?	YES	NO
6.	Use drugs because all your friends do?	YES	NO
7.	Ever try to limit your drinking to certain times of the day or certain places?	YES	NO
8.	Ever feel bad about your drinking or drug use?	YES	NO
9.	Use drugs to control weight or modify your moods without a doctor's prescription?	YES	NO

If you answered yes to any of these questions you might have a drug problem.

How can you tell if someone is using drugs?

The following symptoms are those primarily associated with illegal drugs:

1. A decline in attendence or performance at work or school.
2. Heightened secrecy about actions and possessions.
3. Increased borrowing of money from parents, spouse, or friends; stealing from home, school or employer.
4. Unusual flare-ups of temper.
5. Continual staying out late.
6. Change in mood or attitude.

CLASSIFICATION OF DRUGS

TYPE

Stimulants-speed the action of the central nervous system.

- *Cocaine
- *Amphetamines (Speed)

EFFECT ON BODY

Different types can cause a variety of reactions such as: increased heart rate and blood pressure, dry mouth, sweating, increased activity, shaking and restlessness.

EFFECT ON NERVOUS SYSTEM

Delusions of unlimited mental and physical capabilities. Large does can cause hallucinations.

DANGERS FROM ABUSE

Mental confusion and dizziness can occur. High doses can cause death. A physical dependence does not often occur as frequently as a psychological one does.

TYPE

Depressants-relax (depress) the central nervous system.

- *Opiates-heroin, morphine, codeine
- *Barbituates

EFFECT ON BODY

Reduced hunger, thirst, sex drive and pain. Sends user into a stupor or sleep as if depresses the action of skeletal and heart muscles.

EFFECT ON NERVOUS SYSTEM

User experiences a high euphoric dreamy state. It can depress the action of nerves-leading to confusion. Ability to think, work and concentrate is lessened.

DANGERS FROM ABUSE

They lead to both physical and psychological dependency. The body needs increasingly higher doses. Overdoses can cause death. Barbituates are the leading cause of accidental poisoning and suicides in the U.S.A.

TYPE

Hallucinogens-cause changes in perception and consciousness, 'Mind Benders.'

*LSD
*PCP

EFFECT ON BODY

Increase in heart rate, blood pressure, body temperature, and a reduction in appetite. It affects thought processes and memory.

EFFECT ON NERVOUS SYSTEM

It causes vivid sensory and visual distortions, alters mood and thought. The effects can range from ectasy to terror. The experiences will vary depending on individual physical and

DANGERS FROM ABUSE

Hallucinogens do not produce physical dependence but can lead to psychological need. They are mind affecting drugs that can lead to Paranoia, 'Flashbacks' or DEATH.

TYPE

Marijuane-is technically a 'mild' hallucinogen due to tetrahydrocannabinol (THC). THC is classified as a mild hallucinogenic compared to LSD.

EFFECT ON BODY

Increased heart rate, lowering of body temperature, reddening of eyes, stimulated appetite, drowsiness, lack of coordination and inflammation of mucous membranes and bronchial tubes.

EFFECT ON NERVOUS SYSTEM

Increases and distorts senses. Loss of ability to separate fact and fantasy. Loss of sense of time. Chronic heavy users suffer concentration and memory impairment.

DANGERS FROM ABUSE

A psychological not physical dependence can occur. The tar in maraijuana is 50% greater by weight than tobacco.

SEAT BELT SAFETY

1. Car accidents are the leading cause of death of Americans under 34 years old.

2. The chance you'll be in a car wreck in you lifetime is 1:3.

3. 3/4 of all traffic accidents occur within 25 miles of home.

4. It only takes 6 seconds to buckle up.

5. Seat belts save over 20,000 deaths per year.

6. Skull and brain injuries from car wrecks decrease 33% when seat belts are worn.

Appendix G

Self-Efficacy Scores

Want to Increase Fiber in Diet	Perceived Ability to Increase Fiber in Diet: cannot do it	probably cannot	maybe	probably can	can do it	Desire Total
yes	-.50 n = 2 s.d. = .71	-	-.10 n = 11 s.d. = 1.20	+.15 n = 27 s.d. = .95	+.33 n = 39 s.d. = .98	+.19 n = 78 s.d. = .99
not sure	-	.00 n = 2 s.d. =.00	-.18 n = 11 s.d. = .98	+.33 n = 12 s.d. = 1.30	-.40 n = 5 s.d. = .55	.00 n = 30 s.d = 1.05
no	-	-	-	-.33 n = 3 s.d. = .58	-.50 n = 4 s.d. = 1.29	-.43 n = 7 s.d. = .98
Ability Total	-.50 n = 2 s.d. = .71	.00 n = 2 s.d. = .00	-.14 n = 21 s.d. = 1.06	+.17 n = 42 s.d. = 1.03	+.19 n = 48 s.d. = 1.00	+.10 n = 115 s.d. = 1.01

* There is a significant upward trend in fiber consumption relative to desire to increase consumption ($P \leq 0.02$).

Illustration 1. Change in Fiber Content

Want to Increase Frequency of Strength Exercises	Perceived Ability to Increase Frequency of Strength Exercises: cannot do it	probably cannot	maybe	probably can	can do it	Desire Total
yes	.00 n = 2 s.d. = 0	.00 n = 1 s.d. = 0	=.11 n = 9 s.d. = .60	+.10 n = 42 s.d. = .62	+.21 n = 73 s.d. = .58	+.16 n = 127 s.d. = .58
not sure	-	-	-	+.67 n = 3 s.d. = .58	-	+.67 n = 3 s.d = .58
no	-	-	-	.00 n = 1 s.d. = .00		.00 n = 1 s.d. = .00
Ability Total *	-.00 n = 2 s.d. = .00	.00 n = 1 s.d. = .00	-.11 n = 9 s.d. = .60	+.13 n = 46 s.d. = .62	+.22 n = 74 s.d. = .58	+.17 n = 131 s.d. = .58

* There is a significant upward trend in increase of frequency of strength exercise relative to perceived ability to increase ($P \leq 0.03$).

Illustration 2. Change in Frequency of Strength Exercises

Want to Increase Frequency of Aerobic Exercise	Perceived Ability to Increase Frequency of Aerobic Exercise: cannot do it	probably cannot	maybe	probably can	can do it	Desire Total
yes	+1.00 n = 1 s.d. = .00	-	-.27 n = 11 s.d. = .79	.27 n = 41 s.d. = .79	-.09 n = 56 s.d. = .72	.04 n = 109 s.d. = .71
not sure	-	-1.0 n = 1 s.d. = .00	-.33 n = 3 s.d. = .58	-.25 n = 4 s.d. = .50	-.50 n = 2 s.d. = .71	-.40 n = 10 s.d = .52
no	-	-	-	-	2.00 n = 1 s.d. = .00	2.0 n = 1 s.d. = 0
Ability Total *	-1.00 n = 1 s.d. = .00	-1.0 n = 1 s.d. = .00	-.29 n = 14 s.d. = .73	+.22 n = 45 s.d. = .60	-.07 n = 59 s.d. = .76	.02 n = 120 s.d. = .72

* There Is a significant upward trend in frequency of aerobic exercise relative to the perceived ability to increase ($P \leq 0.03$)

Illustration 3. Frequency of Aerobic Exercise

Desire to Decrease Number of Cigarettes Smoked Per Day	Perceived Ability to Decrease Number of Cigarettes Smoked Per Day: cannot do it	probably cannot	maybe	probably can	can do it	Desire Total
yes	.00 n = 2 s.d. = .00	2.00 n = 6 s.d. = 13.30	2.71 n = 14 s.d. = 7.50	-.15 n = 20 s.d. = 7.60	-4.80 n = 9 s.d. = 17.8	.08 n = 51 s.d. = 10.60
not sure	-	2.50 n = 2 s.d. = 3.50	5 n = 1 s.d. = .00	.00 n = 2 s.d. = .00	-	2 n = 5 s.d = 2.70
no	-	5 n = 1 s.d. = .00	.00 n = 2 s.d. = .00	2.75 n = 4 s.d. = 4.90	.00 n = 1 s.d. = .00	1.60 n = 10 s.d. = 3.30
already do/have	-	-	-	-	.00 n = 1 s.d. = .00	.00 n = 1 s.d. = .00
Ability Total *	.00 n = 2 s.d. = .00	2.4 n = 9 s.d. = 10.60	2.50 n = 17 s.d. = 6.80	.31 n =.26 s.d. = 6.90	-3.30 n = 13 s.d. = 14.70	.45 n = 67 s.d. = 9.30

* There is a significant downward trend in the number of cigarettes smoked per day relative to perceived ability to decrease ($P \leq 0.02$).

Illustration 4. Change in Cigarettes Per Day

GRADUATE SCHOOL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
DISSERTATION APPROVAL FORM

Name of Candidate Betty R. Barfield

Major Subject Community Mental Health Nursing

Title of Dissertation Evaluation of the Effects of Health Risk Appraisals and Health Promotion Teaching of Lifestyle Behaviors

Dissertation Committee:

_____, Chairman

Director of Graduate Program _____

Dean, UAB Graduate School _____

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