PARTICIPATION AND INTEREST OF NON-ACADEMIC EMPLOYEES IN A UNIVERSITY WELLNESS PROGRAM

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CHAPTER 1

INTRODUCTION

"We are killing ourselves by our own careless habits. We are killing ourselves by carelessly polluting the environment. We are killing ourselves by permitting harmful social conditions to persist - conditions like poverty, hunger and ignorance - which destroy health, especially for infants and children (Elder, 1994, p.23)." In Jimmy Carter's foreword to the introduction of *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention* (U.S. Department of Health, Education, and Welfare, 1979), he attempts to address the importance of adopting healthy lifestyle behaviors. The historic publication of *Healthy People* (1979) lead to the release of *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* (U.S. Department of Health and Human Services, 1991) on September 6-7, 1990, which is a written document of the public health objectives for the U.S. population. *Healthy People 2000* has three broad goals to increase the span of healthy life for Americans, decrease the disparities among Americans, and increase access to preventive services for all Americans. As part of the desire to attain these objectives by the year 2000, communities and individuals have made a commitment to achieve optimal health (Elder, Geller, Hovell & Mayer, 1994).

According to the U.S. Department of Health and Human Services (1993B), 81 percent of the U.S. companies offered worksite health promotion programs. Even though health promotion programs have previously been scarce among America's colleges and universities, there appears to be a recent increase in program offerings (Huddy, Johnson & Hymer, 1996). This increase is parallel to the growth of health education and health promotion in general. Along with the *Healthy People 2000* (U.S. Department of Health and Human Services, 1991), the connection between employee health and productivity is primarily responsible for the growth of worksite wellness and disease prevention.

Worksites are much more than a source of income for employees. They are multi-faceted environments that offer professional, vocational, and personal growth and enrichment (U.S. Department of Health and Human Services, 1993A). Comprehensive health promotion programs in the worksite are developed on three levels of intervention: increasing awareness, assisting employees in making lifestyle changes, and creating environments conducive to a healthy lifestyle. Evidence generally supports the effectiveness of worksite health promotion programs (Wilson, Holman & Hammock, 1996). The fact that health promotion programs save money for the employer and are aimed to provide health improvements for the employees has become second to the important issues of personal needs, human relations, and employee morale (U.S. Department of Health and Human Services, 1993A). The major conclusion of the study conducted by Huddy *et al.* (1996) was that it is extremely important to measure expressed health perceptions and concerns of university faculty and staff. These perceptions and concerns will provide information on the emotional status and morale of the employees,

which could lead to the development of programs to increase their morale and emotional status (Huddy *et al.*, 1996).

The U.S. Department of Health and Human Services report of the National Center for Chronic Disease Prevention and Health Promotion (1997) has found four measures that have been shown to be effective and cost-effective in the reduction of chronic disease: promoting individual healthy behaviors, expanding the use of early detection practices, providing young people with health education in schools and community settings, and achieving healthier communities. The path toward achieving healthier communities includes establishing a community climate that promotes and facilitates healthy living and establishing health promotion programs where people work and congregate (U.S. Department of Health and Human Services, 1997).

Purpose and Objectives

The purpose of this study was to evaluate the OSU non-academic employees' personal health habits, current health status, and interests and participation in the OSU Wellness Center Program. Specific objectives were:

1. To identify personal health habits and current health status of the non-academic employees at Oklahoma State University.
2. To find the interests, level of participation, program preferences, incentives to improve participation, most convenient time to participate, and reasons for lack of participation of non-academic employees in the wellness program.
3. To recommend topic areas of health promotion, based on results of the study,

for non-academic employees to the Oklahoma State University Wellness Center Director and staff.

Assumptions

1. The OSU non-academic employees have needs and interests in a wellness program.
2. The non-academic employees at OSU are knowledgeable about the areas of wellness and will objectively respond to the survey.
3. The non-academic employees will provide reliable and valid assessment of their own level of health status and current health habits.
4. The non-academic employees will provide accurate self-reported height and weight values to be used to calculate BMI values.
5. The Public Health Service (U.S. Department of Health and Human Services, 1981) portion of the research instrument is valid and has been pre-tested. The questions taken from the National Survey of Personal Health Practices and Consequences (U.S. Department of Health and Human Services, 1979) are also valid and have been pre-tested.

Limitations

A major limitation of this study was that the survey was only administered to non-academic employees at Oklahoma State University, Stillwater campus, employed 75% time or more during Spring 1998. The generalizations made in this study apply only

to non-academic employees working in a university setting who were willing to return a survey. University non-academic employees are an extremely diverse group of individuals, and this may limit the generalizations and applications of the findings.

Definitions

The following definitions will be used in this study:

1. Wellness: engaging in attitudes and behaviors that enhance quality of life and maximize personal potential, emphasizes the need to take responsibility for engaging in behaviors that develop optimal health (Anspaugh, Hamrick, & Rosato, 1994).

2. Worksite wellness program: an organized program intended to assist employees (and their family members) in making voluntary behavior changes that reduce their health risks and enhance their individual productivity (Wellness Councils of America, 1995).

3. Health: a multi-faceted concept that includes social health, mental health, emotional health, spiritual health, and physical health (Greenburg, 1985).

4. Health Promotion: the science and art of helping people change their lifestyle toward an optimal state of health (O'Donnell, 1996).

5. Optimal Health: a balance of physical, emotional, social, spiritual, and intellectual health (O'Donnell, 1996).

6. Intervention: a health promotion aimed at a target audience which alters a preexisting condition related to that target audience's behavior. The purpose of the intervention is to create healthful behavior (Elder *et al.*, 1994).

7. Health Behavior: The observable actions of people that impact a person's health (McKenzie & Smeltzer, 1997).

8. Personal Health Habits: Pertains to six categories of the individual's habits consisting of smoking, alcohol and drugs, eating, exercise/fitness, stress, and safety (U.S. Department of Health and Human Services, 1981).

9. Current Health Habits: Participants are asked to respond to questions pertaining to personal demographics, exercise/fitness, participation in the OSU Wellness Center, eating habits, medical history, and sleeping habits (U.S. Department of Health and Human Services, 1981).

10. Body Mass Index: An index of a person's weight in relation to height determined by dividing the weight in kilograms(kg) by the square of the height in meters(m) (Whitney & Rolfes, 1996).

11. Office Clerical Employee Classification for Oklahoma State University: This classification includes the following positions Financial Assistant, Office Assistant, Receptionist, and Bookkeeper (Oklahoma State University Personnel Office, 1998).

12. Service Maintenance Employee Classification for Oklahoma State University: This classification includes the following broad range of positions Grounds Keeper, Food Service Aide, Housekeeper, Custodian, Laundry personnel, Automotive Attendant, Animal Care Taker, Stock Clerk, Cook, Baker, Vending Attendant, and Duplicating personnel (Oklahoma State University Personnel Office, 1998).

13. Technical Paraprofessional Employee Classification for Oklahoma State University: These are specialized positions that include Lab Technician and Technologist, Licensed Practicing Nurse, Pharmacy Tech, Library Tech, Agriculture Tech, Lab

Manager, Senior System Technician, Police Officer, and Programmer (Oklahoma State University Personnel Office, 1998).

14. Trades Employee Classification for Oklahoma State University: Trade positions need experience and apprenticeships in the particular trade area and include the following positions Electrician, Plumber, Mechanic, Construction personnel, Carpenter, Steam Filler, Boiler Operator, and Heavy Equipment Operator (Oklahoma State University Personnel Office, 1998).

15. Administrative Employee Classification for Oklahoma State University: This classification typically requires a college degree and includes positions such as Specialist, Coordinator, Assistant Manager, Manager, Assistant Director, Director, Administrative Assistant, Administrative Associate, Communication Specialist, and Counselor (Oklahoma State University Personnel Office, 1998).

16. Professional Employee Classification for Oklahoma State University: This classification includes the following positions Research Specialist, Analyst, Support Specialist, Herd Manager, Engineer, Veterinary Medicine Research, Pharmacist, Local Government Specialist, Physician, Veterinarians, Specialized Photographer (Oklahoma State University Personnel Office, 1998)

CHAPTER II

REVIEW OF LITERATURE

A comprehensive literature search provided information in the following areas: history and theories of health promotion, worksite health promotion, barriers and incentives to participation in wellness programs, six dimensions of wellness programs, effectiveness and impact of worksite wellness programs, and worksite wellness programs in action.

Wellness/Health Promotion in the Worksite

History

Lifestyle behaviors have a major impact on the health status and well-being of individuals. This realization dates back to 5th Century B.C. with the Ancient Greeks' "laws of health." The Greeks were taught during this time to breathe fresh air, eat proper foods, drink the right beverages, take plenty of exercise, get the proper amount of sleep and include emotions when analyzing overall well-being, according to the "laws of health" (U.S. Department of Health and Human Services, 1996). These laws stressed the belief that each person is responsible for maintenance and balance of their own health. The "laws of health" became popular again in the late 19th century when Americans were encouraged to participate in self-improvement, self-regulation, and self-management

emphasizing the responsibility for personal health (U.S. Department of Health and Human Services, 1996). The health promotion programs in the 1940's dealt with single illnesses such as alcoholism, or a single area of the workforce. By 1970, "worksite wellness" was a popular idea, and companies began to implement worksite fitness programs to show support of their employees. When the shift from communicable diseases to chronic diseases as the leading causes of death became apparent, the dangers of negative lifestyle behaviors made wellness and health promotion even more of a priority for this nation.

The Surgeon General's Report of Health Promotion and Disease Prevention (U.S. Department of Health, Education, and Welfare, 1979) launched the U.S. into the health promotion phase of public health history. The goals that were established in this report acted as health promotion and education program initiatives for schools, communities, worksites, clinics, and other health care settings. Even though several publications with a similar message had been written prior to *The Surgeon General's Report of Health Promotion and Disease Prevention* (U.S. Department of Health, Education, and Welfare, 1979); it was unique because it summarized the available research up to 1979, presented the information in a readable format, and made the information available to the public (McKenzie & Smeltzer, 1997).

Then in 1980 the U.S. Department of Health and Human Services published *Promoting Health/Preventing Disease: Objectives for the Nation* (U.S. Department of Health and Human Services, 1980). Fifteen health priorities were defined and grouped into three major program areas - preventive health services, health protection services, and health promotion services. Two-hundred and twenty-seven measurable outcomes were also given in this document. When the U.S. Department of Health and Human Services

published *The 1990 Health Objectives for the Nation: A Mid-course Review* (U.S. Department of Health and Human Services, 1986), it was anticipated that 48% of the objectives would be met in 1990. With the success of meeting the 1990 objectives and the closely approaching deadline, new objectives needed to be established (Windsor, Baranowski, Clark & Cutter, 1994).

With the help of over 1,000 people and organizations, multiple hearings and written and oral testimonies, *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* (U.S. Department of Health and Human Services, 1991), was released on September 6-7, 1990. *Healthy People 2000* has 22 priority areas that are grouped into health promotion, health protection, and preventive services (Windsor *et al.*, 1994). *Healthy People 2000* has three broad goals of increasing the span of healthy life for Americans, decreasing the disparities among Americans, and increasing access to preventive services for all Americans. These goals are followed by 319 specific objectives and an equal number of sub-objectives. The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) priority areas that apply to health promotion include physical activity - injuries, nutrition, tobacco, alcohol and other drugs, family planning, mental health and mental disorders, violent and abusive behavior, and educational and community-based programs (Windsor, *et al.*, 1994). *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) can be used as a framework to guide the continued development and evaluation of a wellness program (Brown, Hilzer, Artz, Glasscock & Weaver, 1995).

A review that was done in 1995-96 showed that 8% of the objectives had been met, with significant progress made in 40% of the objectives, 18% of the objectives had

signs of movement from the target, and 8% of the objectives had no change. This leaves 26% of the objectives with no result. According to this mid-decade report, 25% of the food and drug safety objectives, as well, as 0% of the tobacco objectives had been met (Sondick, 1996).

There are many objectives for the year 2000 that apply to worksite health promotion, however, the objectives that specify health promotion activities in the worksite include increasing the proportion of workplaces with 50 or more employees that offer health promotion activities to at least 75%, to have a 20% or more regular participation rate in these activities, to have at least 30% participation from blue collar workers, and to have 50% of these activities include family members and retirees (Gottlieb, Weinstein, Baun & Bernacki, 1992). Health objectives for the year 2000 have also been written on the state level. In order to improve the health status of Oklahoma citizens the Oklahoma State Board of Health has also created health objectives for the year 2000 entitled *Healthy Oklahomans 2000* (Oklahoma Board of Health, 1996).

The evolution of health promotion programs began with the first generation of programs that were not related to disease prevention. These programs focused on treating disease rather than preventing disease. The second generation programs focused on single interventions to promote disease prevention. They were designed for a single risk factor or behavior and were targeted toward one population. A variety of interventions aimed at a variety of risk factors or behaviors was characteristic of third generation programs. The comprehensive approach to health promotion began with the fourth generation. These programs incorporated activities, policies, and decisions that were related to the health of employees, their families, the community, and the company's consumers. Comprehensive

programs may be directed on three different levels: increasing awareness, assisting employees in making lifestyle changes, or creating environments that are conducive to health lifestyles (U.S. Department of Health and Human Services, 1993A). Once comprehensive programs were well known, the growth of worksite wellness and prevention had also begun.

Rationale for Health Promotion Programs in the Worksite

The rationale behind providing wellness programs in the worksite is the fact that the worksite offers demographic, logistical, professional, and scientific advantages for wellness programs. Worksites have greater access to adults than other community programs, and the social support networks among employees provide a setting for the development of health-related or behavior-related interest groups. Because of these advantages, worksites are able to provide a full spectrum of wellness services with more opportunities to develop and provide comprehensive, integrated health programs. Worksite wellness/health promotion is based on the scientific evidence of disease prevention and the fact that over 50% of chronic disease is related to lifestyle risk factors such as poor diet, smoking, lack of physical activity, excessive stress, and obesity (Anspaugh *et al.*, 1994). The present focus on general health and disease and not only health that is work related provides another basis for worksite wellness. The work environment is no longer the focus as the major source of health problems and as the target of intervention. The focal point has changed to the individual as the target for intervention (Rosen, 1986).

Worksites provide a unique opportunity for targeting high-risk individuals through support, marketing, and educational efforts (Anspaugh, Hunter & Savage, 1996). Participation rates in worksite health promotion programs that are presented on-site range from 20 to 40% and off-site programs have an estimated 10 to 20% participation range (Anspaugh *et al.*, 1996). Program structure influences participation a great deal and multiple structures that consider demographic variables and literacy level should be used to determine the success of each. Worksite health promotion programs can be more effective if a large number of personal health and lifestyle problems are addressed (Shephard, 1996). Robinson and Rogers (1995) also described a need for multiple level interventions to enhance healthy lifestyles. Educational materials, class times, and components of the program must be addressed before the program is presented to the perspective participants.

The worksite is increasingly being seen as an ideal location for learning positive health practices, however; until 1987 there was an extreme lack of data on worksite health activities. The National Survey of the Worksite Health Promotion Activities was conducted and published in 1987 to track the nation's progress toward achieving the 1990 objectives and to identify the extent and scope of activities in worksites in the U.S.. This survey discovered that 65.8% of worksites with more than 50 employees had at least one health promotion program. Smoking control (35.6% of worksites), heath risk assessment (29.5%), back care (28.6%), stress management (26.6%), exercise/fitness (22.1%), and off-the-job accident prevention (19.8%) were the most frequent programs. A majority of the classes, screenings, counseling and programs were paid for by the companies, and employees were offered time off from work to participate. A large number of employers

reported the benefits that came with participation outweighed or equaled the cost. The benefits that were given include improved employee health, increased productivity, and reduced health care costs. The lack of programs pertaining to smoking, weight control and nutrition education showed the areas that needed improvement (U.S. Department of Health and Human Services, 1987).

The employer, the employee, and the health community can benefit from promoting healthier lifestyles in the workplace. The employer gains because healthy employees are absent less, more productive, and use fewer medical benefits. Worksite health promotion programs also strengthen company image, recruitment and morale. Employees benefit from the safe work environment and access to programs that improve their health at a convenient location, often on company time and company money. Health care providers are able to affect the health behaviors of a large population and access clients for medical benefits (U.S. Department of Health and Human Services, 1987).

The work force is changing and heading toward new demographics that need to be addressed when establishing and evaluating worksite wellness programs. There are shifts being seen from blue collar to white collar, from younger to older, and from less women, minorities and disabled workers toward a more integrated work force. By the year 2000, it is estimated that 23% of the population will be over 65 years of age, and by the year 2020, 33% of the population will be considered elderly. A change in family structure will also impact the work force. The number of two-career families, single-parent families, and males and females in new social and economic roles will continue to grow (Rosen, 1986).

Theories

Effective health education and promotion must have a theoretical basis to justify the program. Theories attempt to explain peoples' behaviors relative to their health and what initiates change in these individuals. Many theories predict behavior, and some give an explanation to causes of behavior change. Theories are used to plan, implement, and evaluate successful health promotion interventions. Models are a subclass of theories and work to represent the theories. According to D'Onofrio (1992),

> Theory is not a substitute for professional judgment, but it can assist health educators in professional decision making. Insofar as the application of theory to practice strengthens program justification, promotes the effective and efficient use of resources, and improves accountability, it also assists in establishing professional credibility (p.394).

The theories and models that are commonly used in planning and evaluating health promotion interventions will be discussed here. Stimulus Response Theory (STR) is a behavioral change theory based on conditioning that explains learning as an association of stimulus, response, and reinforcement. Positive and negative reinforcement or punishment condition the behaviors (McKenzie & Smeltzer, 1997). Social Learning/Social Cognitive Theory (SCT) describes behavior change that is affected by environmental influences, personal factors, and attributes of the behavior itself. Self-efficacy is the major determinant in a person's change of behavior (U.S. Department of Health and Human Services, 1996). The feeling of self-efficacy is the belief that an individual can execute the recommended behavior (Windsor *et al.*, 1994). Theory of Reasoned Action (TRA) concentrates on the attitudes toward behaviors rather than the behaviors themselves. A person's intention to perform a given behavior is based on the person's attitude toward the

behavior and the influence of the person's social environment or subjective norm (McKenzie & Smeltzer, 1997). Theory of Planned Behavior (TPB), an extension of TRA is based on the same concepts of TRA with the additional concept of perceived behavioral control as an influence to behavior change. Having this perceived behavior control over opportunities, resources and skills is a major determinant in change (U.S. Department of Health and Human Services, 1996).

Health Belief Model (HBM) and Transtheoretical Model were developed to explain the various types of health behavior theories. The most frequently used model in health promotion application is the HBM. In this model behavior is dependent on the severity of a potential illness, the person's susceptibility to that illness (perceived threat), the benefits of taking a preventive action, and the barriers to taking that action (perceived barriers). Initiating and maintaining patterns of behaviors, according to this theory, depends on cues to action (McKenzie & Smeltzer, 1997). Transtheoretical Model or Stages of Change Model explains the process or continuum related to a person's readiness to change health behaviors. This process includes 5 stages: precontemplation, contemplation, preparation, action, and maintenance. The stages are best described as a cyclical process that involves different rates of movement back and forth along the continuum. The Transtheoretical Model allows health promoters and educators to develop programs that coincide with individual's readiness for change (U.S. Department of Health and Human Services, 1996).

Participation in Wellness Programs

Motivation for Participation

Health promotion programs can result in positive health outcomes if participants are motivated to begin participation in a program, make positive behavior changes, and continue positive health practices. Participation in and completion of these programs may be influenced by a multitude of factors including psychosocial variables, health care providers, family and friends, worksites, program location and program structure. Health Risk Assessments have been found to attract approximately 75% of employees and blood pressure screenings attract 80% to 100% of employees in worksites. Motivation is considered an essential psychosocial variable as an influence to participation in health promotion programs (McKenzie, Luebke & Romas, 1992).

Althoff, Svoboda, and Girdano (1996) describe three categories of factors that appear to determine health behaviors: predisposing factors, reinforcing factors, and enabling factors. Predisposing factors consist of knowledge, beliefs, attitudes, and values. Age, gender, race, socioeconomic status, and other personal characteristics have been found to influence predisposing factors (Anspaugh *et al.*, 1996). These factors are also affected by family members, peers, teachers, employers, health providers and social pressure, which are identified as the reinforcing factors. The enabling factors identified by Althoff *et al.* (1996) include the availability of health resources, accessibility of health resources, and health-related skills.

Based on a combination of theories, Brownell, Marlett, & Lictenstein (1986) believe that there are three stages of change 1) motivation and commitment to change, 2)

initial change, and 3) maintenance of change. Maintaining healthy lifestyle behaviors and continued compliance in health promotion programs is one of the most difficult areas of health promotion. Low compliance statistics for various programs show the generally poor success rate with maintaining healthy lifestyle behaviors after change. According to Anspaugh *et al.* (1996), completion of smoking cessation programs results in only an average of 17% to 20% abstinence rate after one year. Exercise and fitness programs show an average of 50% drop-out rate in the first six months. A coronary heart disease prevention program showed that only 25% of the participants continued their involvement in the program after 5 years. Walsh (1988) reported that the number one reason found for lack of participation in worksite health promotion programs in one study was "being too busy." Therefore, beginning participation and continued participation remains a challenge for health promoters. Further research is needed on motivating Americans to change their unhealthy behaviors and supporting these changes with community environments, policies and social norms (Anspaugh *et al.*, 1996).

Incentives for Participation

According to Wellness Councils of America (1995),

> Incentives incite. They motivate, add pizzazz, reward, recognize, build morale, market, encourage, discourage, heighten awareness, and more. Incentives are the "what's in it for me?" or "what happens if I don't?" They move one to action. Incentives, when, appropriate, and used properly can engender participation, compliance, behavior change, productivity, learning, achievement, awareness, and performance, (pg. 229)

Incentives are described as intrinsic and extrinsic. Intrinsic incentives are based internally and include values, emotions, wants, needs, and desires. Extrinsic incentives are based on

external motivation and include monetary items, cultural and group norms, benefits, discounts, fun, coupons, rebates, material goods, and rules and regulations. McKenzie, Luebke, and Romas (1992) categorize incentives as social reinforcers, material reinforcers, and miscellaneous incentives. Social reinforcers include special attention or recognition, verbal praise, public recognition, encouragement, friendship, and inclusion of friends and family members. Examples of the material reinforcers are inexpensive material items such as T-shirts, hats, pens, buttons etc.; program cost sharing between employer and employee; health insurance benefits; monetary incentives such as coupons, lotteries, raffles, bonus pay or extra pay, pay for unused sick days, and gift certificates; work hours; and contracts. The miscellaneous incentives include special medical examinations and special events such as contests, parties, or luncheons. The U.S. Department of Agriculture (1987) identified ideas for incentives in their "Wellness at the Worksite" manual. Implementing a wellness week at the worksite with the use of wellness posters, contests, healthy lifestyle lectures and presentations, health screenings, fitness classes, awards, and a celebration ceremony were cited as incentive ideas for employees. Posters, classes, and activities to publicize wellness can also be used throughout the year to emphasize the importance of wellness to employees. Gottlieb *et al.* (1992) found in their study of blue-collar workers a strong association between self and friend behaviors, therefore concluding that team or buddy activities and a healthy-support network may enhance participation and impact of programs.

When implementing incentives in a health promotion program it is important to determine the target population and their characteristics, identify appropriate incentives, link the incentives to the behavior or change, and evaluate the impact of the incentive

program. Special needs and interest incentives need to be used to entice the employees to utilize the available programs (WELCOA, 1995). McKenzie & Smeltzer (1997) also give suggestions if incentives are offered in a health promotion program: 1) make sure everyone receives/earns an incentive; 2) make incentives useful and meaningful; 3) ensure that rules are fair, understandable, and followed by everyone; 4) have a large celebration or gathering when awarding the incentive; and 5) use incentives that are consistent with health promotion philosophies.

The literature shows multiple health promotion programs that were using successful incentive-based activities. Washington State school district implemented the "Stick to It" program as an effort to encourage healthy, lasting lifestyle changes among their employees. As a part of this program employees were given a small journal to record and monitor their daily progress and keep track of their points for healthy behaviors. The point system was used to reinforce positive performance. A district health fair and "Wellness Ambassadors" program were used as support for this program (Dalton, 1992). Welch Allyn, a medical instrument manufacturer in Skaneateles Falls, NY, developed a health promotion program titled "Wellchallynge." The title of the program was chosen by combining the company name and the wellness theme. This incentive-based program rewarded employees for healthy food choices, exercise and aerobic activity, and stress reducing activities with prizes and points on an individual and team basis. Prizes included Wellchallynge T-shirts, an American Heart Association cookbook, and a ten dollar gift certificate for sporting goods. The cafeteria supported the program by ordering and labeling low-fat items, sending low-fat recipes via electronic mail and company mail, and creating a cookbook at the end of the program with all the low-fat recipes. Participants

who completed the twelve week program were eligible for one chance at winning the grand prize of a four day Caribbean cruise for two people. The winning teams received extra chances toward the cruise and recognition at the National Employee Health and Fitness Day. Welch Allyn reported a 50% participation rate for the workforce and 81% of the participants completed at least 10 weeks of the 12-week program. Participants lost a total of 1,764 pounds of body weight, 84% felt Wellchallynge helped them change their eating habits, 97.8% believed they would continue to eat healthy foods, 67% reported exercising more frequently than before, 99.1% felt they would continue to exercise, and 93.5% would participate in the program again (Garofalo, 1994).

Anspaugh *et al.* (1996) determined marketing to also be an essential aspect of participation vs. nonparticipation in health promotion programs. They identified key marketing concepts to enhance motivation providing employees with a conceptualization of success, overcoming prior negative issues dealing with wellness programs, creating employee need for programs, focusing programs to meet the needs of the population at hand, and breaking down barriers that hinder participation (Anspaugh *et al.*, 1994). It is important to market and educate to alleviate fears and enhance a sense of security or competence in the participants (Anspaugh *et al.*, 1996).

Barriers to Participation

It is understood that incentives, cues to action, and marketing are pertinent to ensure compliance with healthy behaviors, however, it is also extremely important to recognize and deal with the barriers to a healthy lifestyle. Problems of competence, confidence, and motivation are possible barriers to change. Barriers may also include

competing demands with time and money, a feeling of awkwardness toward the change, injury, feelings of inadequacy, and inability to perform a designated goal (Anspaugh *et al.*, 1996). Anspaugh *et al.* (1994) reported further possible barriers to changing unhealthy lifestyle behaviors as embarrassment, family responsibilities, fatigue, inconvenience, lack of family support, lack of proper facilities and/or equipment, facilities not available, pain and/or discomfort, time, transportation, weather, and work responsibilities.

Dimensions of Wellness Programs

The definitions of health and optimal health, as previously defined, state that they are multi-faceted concepts that are a balance of physical, emotional, social, spiritual, and intellectual health (O'Donnell, 1996). Worksite wellness programs have developed their activities and interventions according to these concepts. According to Wellness Councils of America (1995), worksite health promotion activities that were reported during 1985 and 1992 include job hazards/injury prevention, exercise/physical fitness, smoking control, stress management, alcohol/other drugs, back care, nutrition, high blood pressure, AIDS education, cholesterol, mental health, weight control, cancer, medical self-care, off-the-job accidents, sexually transmitted diseases, and prenatal education. The personal health habits surveyed in this study pertain to six categories of the individual's habits consisting of smoking, alcohol and drugs, eating, exercise/fitness, stress, and safety (U.S. Department of Health and Human Services, 1981A). Therefore, the following dimensions that are discussed were discovered to be core topics in worksite wellness programs and are similar to the personal health habits that were studied.

Exercise/Fitness

Sixty percent of adults in the U.S. do not engage in regular or adequate levels of physical activity to provide minimal health effects (U.S. Department of Health and Human Services, 1997), and twenty-five percent of Americans are not physically active at all (U.S. Department of Health and Human Services, 1996). Approximately 15% of U.S. adults engage in vigorous physical activity three times per week for at least 20 minutes and approximately 22% of adults participate five times per week for at least 30 minutes in physical activity of various intensities. A surge of interest in physical fitness and exercise began with the discovery of the many cardiovascular benefits of vigorous activity in the 1970's. Also during this time the American College of Sports Medicine and the American Heart Association began issuing physical activity recommendations to the public. The 1980's and 90's brought important physical activity research that found health benefits with participation in moderate intensity activities such as walking, gardening, and dancing.

Healthy People 2000 (U.S. Department of Health and Human Services, 1991) and the 1995 *Dietary Guidelines for Americans* (U.S. Department of Agriculture and U.S. Department of Health and Human Services, 1995) include physical activity goals and guidelines. The objectives for the year 2000 for physical activity and fitness in worksites have been met and exceeded for every category of worksite. In 1996 *Physical Activity and Health: A Report of the Surgeon General* (U.S. Department of Health and Human Services, 1996) was published to inform Americans of the importance of improving health and quality of life with moderate amounts of physical activity on a daily basis. This report notified Americans that physical activity does not need to be vigorous in intensity to achieve health benefits. Every increase in physical activity throughout the day adds some

benefit. The Surgeon General's recommendations suggest that physical activity should be performed regularly for better health and should be 30 minutes of moderate intensity activity on most, if not all days of the week. Examples of moderate intensity activities given in this report include brisk walking, lawn mowing or raking leaves, running, and sports. It is also recommended that sedentary people begin with short duration of moderate intensity activity and increase slowly and people with chronic disease or high risk for chronic disease should consult a physician before beginning a new program. Strength training should be added to physical activity programs at least two times per week for adults (U.S. Department of Health and Human Services, 1996).

An estimated 250,000 deaths annually in the U.S. are linked to a lack of regular physical activity. Extensive research has shown a protective effect between regular physical activity and risk for chronic diseases including coronary heart disease, hypertension, non-insulin dependent diabetes mellitus, osteoporosis, and colon cancer. Healthy muscles, bones, and joints; enhanced weight control; and a decrease in the risk for premature mortality have been found with moderate amounts of physical activity. Increasing the duration or intensity of physical activity will increase the health benefits associated with the activity. Participation in physical activity has also shown to decrease depression, anxiety, and tension; improve mood and self-concept, and enhance ability to perform daily tasks throughout life and cope with stress (U.S. Department of Health and Human Services, 1996, Verhoef, Hamm & Love, 1993). Grandjean, Oden, Crouse, Brown, and Green (1996) found aerobic training for at least 30 minutes per day for 24 weeks by females in a worksite fitness program was associated with a significant improvement in cardiovascular fitness without altering lipids or lipoproteins. Shephard

(1996) concluded that participation in well designed worksite fitness programs can enhance health benefits, however this effect is limited by overall low participation rates.

Many factors contribute to an individual's participation in regular physical activity including, the person's health status, ability to engage in the activity, enjoyment of the activity, support from others, previous exercise participation, and beliefs concerning the benefits of physical activity (U.S. Department of Health and Human Services, 1996, Verhoef *et al.*, 1993). Reasons cited for continued participation in physical activity include health, weight control, pleasure, and tension reduction (Puretz, Haas & Meltzer, 1996). Lack of time, lack of an exercise partner, lack of energy, and inconvenient time have been reported as common barriers to participation in regular physical activity. Injury is a common reason for ceasing regular physical (Puretz *et al.*, 1996). Studies have shown an employee participation rate in worksite fitness programs as 20% or less. Many studies have found that 50% of participants who begin an exercise program drop out within the first six months. The focus for exercise programs may need to shift from aerobic activities with a frequency of 20 to 30 minutes and maintaining at least 60% of cardiovascular capacity to an emphasis on light to moderated physical activity intermittently throughout the day. These activities may have a larger adherence rate over time (Robison & Rogers, 1995).

Demographic variables have been found to strongly correlate with participation in fitness programs. Men are more likely to engage in regular physical activity, vigorous exercise, and sports compared to women. However, Spilman (1984) found greater participation by women compared to men. Verhoef *et al.* (1993) discovered that only 27% of women with exercise programs or facilities available at work used the programs.

As age increases physical activity in general has shown to decrease. Physical inactivity is more common among Americans who are considered to be uneducated and who are socially and economically disadvantaged. It has also been found that higher levels of education are associated with more leisure time activities compared to people with less education. Smokers compared to non-smokers are more likely to cease participation in a fitness program, and blue-collar workers are less likely to engage in leisure time physical activity compared to white-collar workers (Gottlieb *et al.*, 1992).

Nutrition Education

Greater than one-third of adults in the U.S. are overweight, and less than one-fourth report eating the recommended amounts of fruits and vegetables. Obesity and dietary habits are related to five leading causes of death, cardiovascular disease, some types of cancer, stroke, diabetes mellitus, and coronary artery disease (U.S. Department of Health and Human Services, 1997). Also the relationship between obesity and increased risks of morbidity and mortality is well established. Obesity profoundly affects quality of life, especially with bodily pain being common among obese persons (Fontaine, Cheskin & Barofsky, 1996). BMI, as defined previously, is used by many health professionals as an indicator of healthy weight, however, it does not assess the amount of weight that is considered body fat or the location of the body fat. In 1994, the average BMI of adults in the U.S. was 26.3 (Kuczmarski, 1994). According to Burton & Foster (1985), this BMI is considered acceptable for men and women. However, Whitney & Rolfes (1996) consider a BMI of 26.3 as overweight for men and women. The subjects' BMI values in this study will be compared to the standards reported by Burton & Foster (1985). BMI

values correlate with disease risks. Disease risk increases as the BMI falls below or above 20-25, which is the indication that not enough fat and too much fat impair health. People with acceptable body weights to slightly overweight are found to live the longest (Whitney & Rolfes, 1996).

With these facts nutrition interventions to promote changes in dietary behaviors become extremely important to the health of this nation. The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) goals for the area of nutrition contains 21 objectives. One of these objectives is to decrease the prevalence of overweight to no more than 20% among persons 20 years of age and older, however, the prevalence has actually increased from 26% in 1980 to 34% in 1991. Progress toward the 2000 goal has been reported for worksite nutrition/weight management programs (Lewis, Crane, Moore & Hubbard, 1994). The number of worksite nutrition education programs has increased from 17% in 1987 to 31% in 1991, which is a major improvement toward the goal of 50% for the year 2000. Worksites that offer weight control programs have also increased from 15% in 1987 to 24% in 1991, toward the goal of 50% (U.S. Department of Health and Human Services, 1993).

According to the *Third Report on Nutrition Monitoring* (Federation of American Societies for Experimental Biology, Life Sciences Research Office, 1995), total fat, saturated fatty acids, cholesterol, and sodium remain above recommend levels for optimal nutrition. Calcium and iron intakes are lower than the recommended values especially in populations at high risk for deficiencies. The average daily intake of fruits and vegetables for the general population is approximately four servings. Less than one-third of American adults are consuming five or more servings of fruits and vegetables per day.

Nine to thirteen percent of low-income households and families are experiencing some degree of food insufficiency. Nutrition education intervention and programs can promote healthful diet changes and have a positive effect on changes toward better food choices (Salmon, Hunt, Pope & Tolman, 1996). *Healthy People 2000* objectives also address positive food choices. The baseline data for the amount of Americans that prepare foods without adding salt was 54% in 1987 with the goal for the year 2000 as 65%. American adults who avoid using salt at the table was 68% in 1987, 55% in 1991 with 80% being the goal. Adults who regularly purchase foods lower in sodium was 20% in 1987, 36% in 1991, and the goal is 40% (U.S. Department of Health and Human Services, 1993).

Positive changes toward healthy eating habits are influenced by factors other than health concerns. They are influenced by taste preferences, confusion about current dietary recommendations, time and money constraints in association with the belief that it is more difficult and more expensive to eat a healthful diet (Harnack, Block, Lane, 1997). All of these barriers must be addressed for nutrition education to be effective and successful in changing dietary behaviors. According to Kennedy, Meyers, and Layden (1996), the American public has specific needs that must be met to initiate healthy eating habits. Knowledge of dietary recommendations and knowledge of how to incorporate those recommendations into every day life are critical for long-term behavior change. It is also important to promote the benefits of eating a healthy diet, to translate the dietary recommendations into behaviors, and to provide straightforward advice. Kennedy *et al.* (1996) also provided strategies for effective nutrition promotion. These strategies include: focus on client behaviors; segment and target audiences; tailor and enforce the message; use multiple, interactive channels to communicate the message; and continually change

and update the message to meet varying needs of the clients. Patterson, Kristal, and White (1996), also advise that the promotion of healthful dietary changes can be accomplished by increasing the public's beliefs in diet and health associations and communicating diet recommendations. In order to meet all of these guidelines for effective nutrition education a qualified nutrition professional is needed. Dietitians are nutrition professionals that are an extremely important component of wellness center programs, namely nutrition and weight management programs. The dietitian in a worksite wellness setting must assess and understand the needs, interests, and concerns of the target population to be effective. Dietetics professionals use a variety of nutrition related material and education tools to enhance learning including, the Recommended Dietary Allowances (RDA) (National Research Council, 1989), the Dietary Guidelines, the Food Guide Pyramid, and other material provided by national nutrition campaigns.

The RDA (National Research Council, 1989) (Appendix A) are a set of nutrient standards produced by the Committee on Dietary Allowances. They are based on scientific knowledge and provide the amounts of selected nutrients considered adequate to meet the known nutrient needs of practically all healthy people. RDA are established for energy (kilocalories) and for nutrients with known deficiencies. Revisions of the RDA are periodic as new evidence becomes available (Whitney & Rolfes, 1996). They are not meant to be guidelines for the consumer/client. Their original purpose was to serve as standards for planning food supplies for population groups. When the RDA are used to assess the adequacy of diets in maintaining proper nutrition the goal should be to meet these average daily amounts over a three day period (Herron, 1991).

The 1995 *Dietary Guidelines for Americans* were written with the advice of the nation's leading health and nutrition experts about the role of nutrition in maintaining health and minimizing the risk of major chronic diseases in the U.S. They are the fourth revision of the guidelines, and it is now a law that the guidelines be reviewed every five years. These guidelines offer Americans an explanation of how to eat and live to promote good health (Finn, 1997). The U.S. Department of Agriculture and the U.S. Department of Health and Human Services (1995) publish the guidelines, and they currently recommend:

1) Eat a variety of foods.
2) Balance the food you eat with physical activity; maintain or improve your weight.
3) Choose a diet with plenty of grain products, vegetables, and fruits.
4) Choose a diet low in fat, saturated fat, and cholesterol.
5) Choose a diet moderate in sugars.
6) Choose a diet moderate in salt and sodium.
7) If you drink alcoholic beverages, do so in moderation.

The latest guidelines include an explanation on meatless eating, emphasize exercise more than earlier versions, and recommend that health risks associated with excess weight are the same at all ages (Whitney & Rolfes, 1996).

The Food Guide Pyramid (Appendix B), developed by the U.S. Department of Agriculture and the U.S. Department of Health and Human Services was introduced in 1992. This Pyramid is a graphic representation of the Dietary Guidelines, and expresses the qualities of a healthful diet which include, variety, balance, and moderation. The Food Guide Pyramid is constructed with five food groups and the Pyramid tip. Each group provides some nutrients for good health, so eating a variety from all groups will provide all of the nutrients necessary for good health. In moderation, all foods can fit into a

healthful diet following the Food Guide Pyramid. A range of servings from each food group allows flexibility to adjust for age, gender, body size, and activity level. The Pyramid also focuses on the reduction of fat. Along with the fat recommendations from the Dietary Guidelines, the Pyramid implies that a healthy diet would include only sparse amounts of fat and sugar (Finn, 1997).

Dietitians also use recommendations provided by national nutrition campaigns and organizations. The National Cancer Institute recommends 20 to 30 grams of fiber be consumed per day as part of a healthy diet (National Cancer Institute, 1995). The National Cancer Institute along with the Produce for Better Health Foundation sponsor the "Five a Day for Better Health" campaign as part of a promotion to increase the amount of fruits and vegetables in the average American diet. Increasing the amount of fruits in vegetables in the diet can assist Americans in following a low-fat, high complex carbohydrate, and nutrient dense eating plan (Harnack, Block, and Lane, 1997).

Nutrition intervention, described as planned change to empower individuals, groups, and populations to make healthful food choices, is an important part of a worksite wellness program. Dietitians in worksite health promotion are responsible for providing sound science-based food and nutrition information to all employees. The nutrition education programs must be developed according to the needs, behaviors, motivations, and desires of the target audience (American Dietetic Association, 1996).

Tobacco Use

Tobacco use kills more Americans than motor vehicle crashes, Acquired Immunodeficiency Syndrome (AIDS), cocaine, heroin, homicide, and suicide combined.

Use of tobacco is responsible for one of every five deaths each year, approximately 1,100 deaths every day and over 400,000 deaths per year (U.S. Department of Health and Human Services, 1997). Twenty-one percent of all coronary heart disease deaths, 87% of all lung cancer deaths, and 82% of COPD deaths are attributable to tobacco use (U.S. Department of Health and Human Services, 1993). Cigarette smoking, the use of smokeless tobacco, and alcohol consumption have significant roles in the development of oral cancer. Tobacco use is the single most preventable cause of disease and death in the U.S.; however, in 1991, 46.3 million Americans were cigarette smokers (Nelson, Emont, Brackbill, Cameron, Peddicord & Fiore, 1994). In 1994 the Behavioral Risk Factor Surveillance System reported that prevalence of smoking was higher in Oklahoma than the BRFSS median for the U.S. (Oklahoma Board of Health, 1996). Tobacco use also has an economical impact on Americans. Nelson *et al.* (1994) reported that smokers cost 30% more annually in medical costs compared to nonsmokers in the U.S.. At the ten year follow-up of the Multiple Risk Factor Intervention Trial (MRFIT) subjects, the men who had died of lung cancer were either cigarette smokers at the beginning of the trial or were ex-smokers at some point in life. This follow-up also showed an association with increased risk of lung cancer and an increase in the number of cigarettes smoked, and the risk for coronary heart disease death was greater in the smoking subjects compared to the nonsmokers (Ockene, Kuller, Svendsen & Meilahn, 1990).

The prevalence of cigarette smoking has been associated with demographic variables. Level of education has been found to be one of the strongest predictors of health promoting behavior, including smoking prevalence. People who have had between nine and eleven years of education have been found to be most likely to be current, ever,

and heavy smokers and the least likely to quit. After 11 years of education the likelihood of smoking decreases and smoking cessation increases with each year of education (Zhu, Giovino, Mowery & Eriksen, 1996). Fabian, Irish, Brown, Liu and Gullane (1996) reported that the subjects with more education and higher level occupations were found to be more informed of the causes of oral cancer compared to the subjects with less education and lower level occupations. The relationship between smoking and occupation is complex. However, prevalence of cigarette smoking remains higher among blue collar workers, service workers, and military personnel compared to white collar workers. The prevalence of smoking among blue collar workers in 1991 was 36% (Nelson, *et al.*, 1994). Unemployed people are more likely to smoke than employed. There has been a decrease in the incidence of smoking among leaders in the worksite namely, managers, administration and professional, and technical workers, which may lead to encouragement for other employees to quit (Nelson *et al.*, 1994).

Stress and boredom have been reported as indicators for increased tobacco use and initial use among military personnel (Forgas, Meyer & Cohen, 1996). High levels of perceived job strain and occupational stress have also been shown to be associated with an increase in smoking and a lack of cessation efforts. Many smokers believe smoking is a means to decrease their stress. There are also many social factors that play an important role in smoking habits. Smokers may be encouraged or discouraged to continue their smoking habits according to peer and family smoking habits (Nelson, *et al.*, 1994).

Smokeless tobacco use has been associated with less healthful sleep patterns, increased alcohol consumption and intoxication, and decreased job satisfaction and organizational commitment when compared to non-tobacco users. It has also been found

that smokeless tobacco users and cigarette smokers do not work as hard and take more breaks during the day than non-smokers (Donaldson, Dent, Sussman, Stoddard & Severson, 1996). Smokeless tobacco use has declined only slightly in recent years, which may be due to the increased amount of advertisements portraying smokeless tobacco as a substitute for smoking (Nelson, Tomar, Mowery, & Siegel, 1996).

Exposure to environmental cigarette smoke in the workplace and home settings has also been found to be detrimental to health. Second hand smoke is known to be carcinogenic. Emmons, Marcus, Abrams, Marshall, Novotny and Kane (1996) found that 25% of the participants lived with smokers and 96% had regular exposure to tobacco smoke at work. Smoke-free policies and smoking restrictions in the workplace have been found to influence smoking behavior by encouraging smoking cessation. However, the current smoking policies in the workplace may need to be strengthened to have an impact on the number of employees that quit (Hennrikus, Jeffery & Lando, 1996). Nelson *et al* (1994) found that pairing worksite smoke-free policies and increased smoking cessation awareness and programs to be successful in smoking cessation.

As previously discussed there are many barriers and incentives to improve health promoting behaviors, including smoking cessation. Prevention of smoking and smoking cessation is extremely important at the youngest age possible. Breslau, Peterson, Schultz, Andreski and Chilcoat (1996) discovered that smokers known to be active alcoholics were found to be 60% less likely to quit than were smokers that had no history of alcoholism. Abstaining from alcohol use was associated with three times as much participation in subsequent smoking cessation programs. Hennrikus *et al.* (1996) found that occasional smokers were more likely to quit than daily smokers. They also reported that job

monotony and repetitiveness were more common among daily smokers than among occasional smokers. Unger (1996) found that his subjects that were in the later stages of change of smoking cessation were also abstaining from alcohol and participating in more exercise than subjects in the early stages of change. This study began to see that people are more likely to concurrently make improvements in several health behaviors.

The social influences and supportive environment that are present in the worksite make nonsmoking and compliance with smoking cessation more possible. Peer support and a supportive environment can have a large impact on smoking cessation. Due to these positive influences, worksite smoking cessation programs have shown reductions in the prevalence of smoking in many instances. The worksite programs also have the advantage of being conveniently located for employees. Smoking cessation offers many benefits for employees and worksites including, increased productivity and morale, monetary savings from lower absenteeism, disability and health care costs; and cleaner work environments (Nelson, *et al.*, 1994). The subjects who participated in MRFIT and were assigned to the special intervention smoking cessation program that included encouragement, nutrition education, and counseling had higher smoking cessation rates than the usual care group smokers. The special intervention group also had 25% that remained abstinent from smoking compared to only 7% of the usual care smokers that remained abstinent. MRFIT also found that one year of smoking cessation was associated with a significant decrease in mortality risk of coronary heart disease. Three years of smoking cessation showed even lower mortality risk of coronary heart disease. However, lung cancer risk was the same at one and three year cessation. The beneficial effects on lung cancer risk with smoking cessation are known to take as long as 20 years (Ockene, *et al.*, 1990).

Worksites are recommended to offer smoking cessation programs to all employees and to encourage smoke-free policies. Occupational health professionals during health screenings and assessments are recommended to record smoking status, counsel employees on smoking cessation at each visit, discuss adverse effects of smoking and benefits of quitting, provide written material on quitting, encourage employees to set a quit date, and provide follow up support. All smoking cessation materials must be written at an appropriate reading level for the individual in order to have the greatest impact on smoking behavior (Nelson, *et al.*, 1994). In order to meet the *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) goal to decrease smoking prevalence among blue collar workers to 20%, more smoking cessation programs will be needed. Further *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objectives for tobacco use include decreasing cigarette smoking prevalence among people 20 years of age and older to 15% and increasing the percentage of people who attempt to quit tobacco use to 50%. Twenty-six percent of Americans 20 years of age and older were reported as cigarette smokers in 1991, and only 39% of the smokers in 1991 attempted to quit.

Alcohol/Drug Abuse

Alcohol and drug abuse is defined as the repeated or episodic self-administration of alcohol or drugs to the extent of experiencing harm from their effects or from the social or economic consequences of their use (World Health Organization, 1993). Alcohol dependence or alcoholism is a progressive disorder typically defined in terms of the overwhelming impact of drinking in all areas of a person's social, psychological, and

physical function. Problem drinking is drinking that leads to or creates risks for deviant and destructive acts, which include public intoxication, drinking at work, driving while intoxicated, fighting, family disruption, and violence (Roman & Blum, 1996). Alcohol dependence does not develop suddenly, and alcohol consumption is not usually associated with job related drinking. Therefore, the diagnosis of alcohol dependence needs observation over time and the assistance of persons in the alcoholic's social structure. A clear majority of the American adult population use alcohol at least somewhat regularly. Abstaining from alcohol completely is not culturally or socially appropriate in the U.S.; however, health professionals recommend only minimal consumption of alcohol (Roman & Blum, 1996).

Factors that lead to alcoholism vary from person to person. The general factors that contribute to alcoholism include psychological factors, sociocultural influences, influences of peers and family, physiological and biochemical factors, and possible genetic factors (Althoff *et al.*, 1996). Gottlieb *et al.* (1992) found greater personal loss in the past year as a predictor of alcohol use.

Characteristics associated with alcohol and drug use have been determined in various studies. French, Zarkin, Hartwell and Bray (1995), found better educated people and white males most likely to have consumed alcohol daily in the past year, and found non-whites to be slightly more likely to have reported illicit drug use in the past year. Mirand and Welte (1996) found heavy drinking positively related to being male, suburban residency, and current use of cigarettes. They also reported a negative association between drinking and socioeconomic status, rural residency, and degree of health orientation. Single people, smokers, other drug consumers, ex-drinkers, and habitual

drinkers are those who most commonly have problems connected with alcohol consumption.

The adverse consequences related to substance use and abuse are imposed on not only the user, but also coworkers, employers, family, peers, and other members of society (French, Zarkin, Hartwell, & Bray, 1995). Alcohol consumption is the main contributor to cirrhosis, the number 10 cause of death in the U.S. (U.S. Department of Health and Human Services, 1993B). Damage to the hepatic, cardiovascular, gastrointestinal, and neurological systems is related to chronic heavy drinking. Other alcohol related medical problems include alcoholism, cancer, endocrine disorders, and fetal alcohol syndrome. Alcohol use is related in almost half of all motor vehicle accidents and fatal intentional injuries, such as suicide and homicide (Althoff *et al.*, 1996). Work related consequences are also with alcohol consumption. According to French, Zarkin, Hartwell and Bray (1995), 20% of alcohol drinkers in their study reported poor performance because of their alcohol use, 6% of heavy drinkers reported tardiness, absenteeism, or leaving work early, and 5% reported illicit drug use in the past year. They also discovered an association with increased drinking and an increased probability of poor job performance. However, the response rate for alcohol affecting job performance may be associated with denial issues. Worksites are mainly concerned with work-specific effects of chronic alcohol use which include disruptive, unpredictable, and substandard performance (Roman & Blum, 1996).

Substantial societal investments in treating alcohol related problems and alcohol dependence may lead worksites to believe additional investments in alcohol rehabilitation are worthless. However, worksite interventions have been found to be effective in rehabilitating employees with alcohol problems. Researchers recommend that worksites

identify both alcoholics and problem drinkers as early as possible. Roman and Blum (1996) reported that the more severe the symptoms of alcohol abuse, the less chance of recovery. They also reported two basic formats for alcohol and drug interventions: 1) worksite based programs designed to provide assessment, referral, and follow up services to employees with alcohol related problems, and 2) variety of forms of training or education about alcohol problems based on an Employee Assistance Program model. They believe that family-based interventions in the worksite may be used to motivate alcohol-dependent persons to seek treatment. These interventions may also prohibit alcohol use on the job, identify problem drinkers and alcoholics, and decrease the physical health consequences of drinking. The World Health Organization (1996) reported reductions in average daily alcohol consumption and in intensity of drinking after subjects were exposed to either a five minute session of simple advice or a 20 minute brief counseling session. Both interventions were equally effective in reducing average daily intake and intensity of alcohol use. Worksite interventions that include core components of Employee Assistance Programs (EAP) are effective and report a high degree of success in rehabilitating employees with alcohol related problems (Roman & Blum, 1996).

Stress Management

Stress, as defined by Althoff *et al.* (1996), is the body's reaction to outside pressures. The stress response may be activated by physical, social, psychological, or imaginary stimulators. Stress is the body's "fight or flight" response, and the body's general adaptation to stressors in life. There are three stages of stress, alarm, resistance, and exhaustion (Hafen & Hoeger, 1994). Positive stress, also referred to as eustress, is

healthy and awareness building. The body is able to adapt to the positive stress, and it enhances the body's performance. Negative stress or distress is experienced when the body can no longer cope with the stress, and it becomes debilitating and harmful to performance. Distress has been known to cause overreaction, confusion, and poor concentration. Optimal stress is in between eustress and distress when performance is at its best, and the stress is strong enough to act as a motivator (Althoff, Svoboda & Girdano, 1996).

Stress has been shown to affect almost every body system. It does not have a causal effect on disease; however, it is strongly associated with disease onset. Stress is related to cardiovascular disease by increasing blood pressure, constricting blood vessels, and decreasing blood circulation. Stress also suppresses the body's immune response, and increases the incidence of hypertension, heart attacks, migraine headaches, and ulcers (Anspaugh *et al.*, 1994).

Job related stress has a high prevalence in the U.S.. This stress can be associated with a wide range of job tasks, psychological, and organizational factors, some of these factors include the amount of employee responsibility, utilization of personal talents, lack of control over job decisions, poor supervision, inadequate rewards and promotions, and unpleasant environmental conditions. This stress on the job can lead to job dissatisfaction, decreased motivation, poor morale, burn-out, increased errors, decreased quality and quantity, tense work relations, and increased medical visits (Murphy, 1996). High job demands and low decision latitude are associated with physiological illness and psychological strain (Sorensen, Lewis & Bishop, 1996). A survey distributed by Murphy *et al.* (1996) found that 46% of the respondents reported stressful job situations and 27%

reported job stress to be the single largest stressor in life. Rosen (1986) reported the top 12 jobs with the most stress related illnesses were laborer, secretary, inspector, clinical lab technician, office manager, foreman, manager/administration, waitress/waiter, machine operator, farm owner, miner, and painter. Stress management programs and techniques are essential in the workplace to avoid the negative impact that stress may have on work performance and environment.

Coping with stress was found to be related to rest and the amount of sleep a person gets during the night. Hafen and Hoeger (1994) have given guidelines to follow to ensure an individual is receiving the proper amount of rest. Individuals are recommended to establish a sleep pattern; take a 20 minute nap during the day if needed; avoid napping in the afternoon; eat a light dinner; avoid caffeine consumption after six p.m.; use bedroom for sleeping only; and sleep six to eight hours per night. Women are more inclined to suffer from sleeping disorders than men. Depression and limited physical activity have a large influence on sleep disturbances, and all sleep disturbances increase with age (Newman, Enright, Manolio, Haponik & Wahl, 1997).

Stress management interventions are designed to help employees change their appraisal of stressful situations or cope more effectively with the symptoms of stress (Murphy, 1996). Techniques to avoid stress at work include job redesign, change of physical settings, improved safety and hygiene programs, job complexity, rotation opportunities, and stress management considerations (Rosen, 1986). Stress management is decreasing excess stress in life and includes understanding stress response, recognizing the stressors, developing stress reduction skills, and incorporating these skills into daily life. Handling stress is also related to eating a balanced diet, regular physical activity,

proper rest, time and stress management skills, and relaxation. Types of relaxation include meditation, progressive relaxation, breathing techniques, autogenics, biofeedback training, yoga, and combination. Studies that have used a combination of two or more relaxation techniques were the most effective. Meditation is very practical because it is inexpensive, easily learned, requires very few training sessions, and is an ideal worksite stress management technique. Muscle relaxation combined with cognitive-behavior skills training was reported as the most common intervention in the worksite stress management literature and was also the most effective. Stress management programs need to include education to help participants change living habits, modify their environments, and cope with the environment if changes are unable to be made (Peddicord, 1991). These comprehensive stress management interventions should assist employees on an individual and organizational level.

Safety

Risk taking behaviors are often associated with accidents and lack of safety concern. If people are aware of the risks related to their actions it may help to decrease the frequency of these risk taking behaviors. Common injuries in the workplace are soft tissue wounds, electrical injuries, head and eye injuries, chemical burns, musculoskeletal injuries with trunk and spine injuries being most common, and carpal tunnel syndrome. Occupations at highest risk for work related accidents are construction, agriculture, service, government, transportation, public utilities, trade, manufacturing, and mining (Mayhew, 1991).

Many work-related injuries and deaths are among younger, newer employees, who may require safety training and other initiatives to decrease work-related morbidity and mortality (U.S. Department of Health and Human Services, 1993B). Appropriate vocational education and counseling concerning specific job risks and how to avoid accidents is important for all employees. Employees need to be reminded of the importance and effectiveness of safety regulations if they are followed properly. The use of safety glasses, protective footwear, and gloves when necessary should also be enforced by worksites (Mayhew, 1991).

The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objectives for occupational safety and health address the areas of worksite occupant protection system mandates, worksite health and safety programs, and worksite back injury prevention and rehabilitation programs. According to the *Healthy People 2000 Review 1992* (1993B) goals have not been met for worksite health and safety programs and worksite back injury prevention and rehabilitation programs. Safety issues in the workplace are often addressed by two separate entities, the worksite health promotion programs and the occupational safety and health programs. These programs could combine their interventions and become much more comprehensive and effective with their efforts (Baker, Israel & Schurman, 1996).

Back injury prevention programs in the workplace are known to decrease the amount of back injuries reported. The four types of interventions for back injury prevention are back belts, back schools, exercise and flexibility training, and education classes. Back schools and exercise and flexibility training have been associated with greater frequency of positive results. Even if an organized intervention is not present in

the workplace, all employees should be instructed on the use of proper body mechanics when lifting to avoid back injury (Karas & Conrad, 1996).

Safety and risk taking behaviors go beyond the workplace. Prevention of accidents at home, when operating motor vehicles, and during leisure activities is also very important and can be addressed in worksite safety programs. Motor vehicle accidents are the number one killer among men aged 15 years to 24 years and are often related to alcohol or drug use. These accidents can be tremendously reduced in severity and frequency by using seat belts, observing posted speed limits, and using motorcycle helmets. Laws requiring Americans to wear their seat belts are in effect, however, people still do not use them. Sport and leisure activity injuries can be avoided by following safety precautions appropriate for the activity. Fire related accidents and deaths in the home and workplace can be reduced by the presence of functioning smoke detectors. Seat belt use, following sport safety precautions, and maintaining a functioning smoke detector could be areas stressed in a worksite safety program, and this could lead to increase compliance with safety precautions (Mayhew, 1991).

Effectiveness, Impact, and Benefits of Participation in Worksite Wellness Programs

College and University Employee Worksite Wellness Programs

The effectiveness of health promotion and wellness education programs for college and university employees is not well published in the literature. However, evidence generally supports the effectiveness of worksite health promotion programs. Bertera

(1990) examined the impact of a comprehensive workplace health promotion program on illness absences not related to occupational causes. The blue collar worker participants had a 14% decrease in the number of disability days over two years compared to a 5.8% decrease among non-participants. Comprehensive workplace health promotion programs were found to return $1.45 in lower hospital insurance costs and an additional $1.42 in lower disability wage costs for every dollar invested in the health promotion program (Bertera, 1990).

Warren and Sheller (1996) reported that 550 colleges and universities offer health promotion and wellness programming. Research involving these universities and their wellness programming is needed. Colleges found that wellness programs cut absenteeism, boost productivity and morale of their staff members (McMillen, 1986). Watts, Waigandt, Londeree and Sappington (1992) reported that the University of Missouri Health Education and Lifestyle Promotion (H.E.L.P) Program was cost-effective, time-efficient, and highly successful. This multidisciplinary, comprehensive approach to wellness differs from programs that enable employees to choose from one or more programs, because the University of Missouri's program participants were involved in all interventions included in the program. Participants experienced significant weight loss, significant improvements in body composition, significant reductions in total cholesterol levels, significant reductions in systolic and diastolic blood pressure levels, and decreased resting and exercise heart rates (Watts *et al.*, 1992).

Knight, Goetzel, Fielding, Eisen, Jackson *et al.* (1994) examined the effect of an employer-sponsored health promotion program on worker absenteeism over a four year period in a group of Duke University hourly employees. The participants had an average

of 4.6 fewer absentee hours in the third year of the program as compared to non-participants. These data suggest comprehensive multi-component health promotion programs may have positive effects on participant absenteeism in a university setting (Knight *et al.*, 1994). Goetzel, Kahr, Aldana and Kenny (1996) also reported on the long term effects of the Duke University Live for Life health promotion program. Employees with improved health habits were expected to use fewer sick days, medical care services, and worker's compensation benefits. Significant improvements were found among participants in cholesterol management, tobacco use, exercise, fiber intake, fat intake, alcohol use, and motor vehicle safety. Participation in this health promotion program showed a decrease in the number of employees that were considered high risk in the eight areas of improvement previously mentioned. They discovered that focusing on high risk populations with the use of one-to-one, targeted intervention programs can lead to long term positive health effects and behavior modification can reduce health risks and improve employee health (Goetzel *et al.*, 1996).

O'Quinn (1995) also found positive effects of participation in a worksite wellness program in a university setting. Members of the wellness program in this study had a higher frequency of practicing health responsibility and exercise behaviors as compared to nonmembers. The findings overall suggest that university employees who exercise on a regular basis participate in the most healthy lifestyle behaviors (O'Quinn, 1995).

Summary of Literature Search

Because workers spend more than 30% of their waking hours at work and by the year 2000 it is projected that the U.S. labor force will consist of 140 million people, the worksite has great potential for health promotion and education. It is known that well-designed research studies to definitively determine the significant benefits of health promotion programs are needed in the future to further promote these activities (Pencack, 1991). As the millenium approaches Americans are faced with the realization that prevention and wellness in all aspects of life, lead to an improved state of health. Family members, peers, teachers, employers, co-workers, health providers, and community professionals act as reinforcing factors to change unhealthy behaviors; however, the individual is responsible for his or her own health. In order to motivate individuals to change their unhealthy behaviors wellness programs must address the needs of the population, work to break down barriers that may hinder participation, offer incentives to enhance participation, and support the individual through changes in the community environment, policies, and social norms.

Wellness programs are more beneficial and effective if they are based on the target populations' needs and wants. Therefore, needs assessments and wellness research are needed to determine these needs and wants. The literature has shown a lack of studies that concentrate on university non-academic employees. Most university wellness program studies include faculty and staff together. Oklahoma State University faculty were surveyed by Eckhart (1987) and Duncan (1996) to determine personal health habits, current health status, and interest and participation in the Oklahoma State University

Wellness Center, but these studies did not include non-academic employees. The need to survey the non-academic personnel at Oklahoma State University is based on the assumption that non-academic employees are a large and diverse population in regards to education level, job activity, health habits, and age. The researcher, however, cannot assume that non-academic employees are similar to the faculty in regards to demographic variables, personal health habits, current health status, and interest and participation in the OSU Wellness Center.

CHAPTER III

METHODOLOGY

The purpose of this study was to evaluate the non-academic employees' personal health habits, current health status, and interests and participation in the wellness center program on the Stillwater campus, Oklahoma State University. This chapter includes the research design; description of the population to be studied; data collection including instrumentation and procedure; and data analysis.

Research Design

The descriptive status survey is the research design that was used in this study. Descriptive research involves the description, recording, analysis, interpretation of current conditions, comparison or contrast, and attempts to discover relationships between existing variables (Best & Kahn, 1986). The study focused on the relationships between existing variables and did not attempt to manipulate variables. The relationships that were discovered provide the Wellness Center baseline data for the non-academic employees at OSU.

Sample/Population

The population included only non-academic employees who were employed full-time (75% FTE and higher) at Oklahoma State University, Stillwater campus, during the Spring of the 1998 academic year who were classified as office clerical, service maintenance, technical paraprofessional, trades, and administrative and professional. From this population, OSU Planning, Budget and Institutional Research generated a stratified random sample of 900 employees from the approximately 2,700 non-academic employees employed full-time (75% FTE and higher). An even number of employees from each job classification was selected for a true stratified sample. Labels were also provided for this random sample by OSU Planning, Budget, and Institutional Research. The survey was copied and folded and the incentive slip attached by the Engineering Duplicating Center on the Stillwater campus. The copied surveys were then delivered to OSU Central Mailing where the labels and closing tabs were attached, and the surveys were then sent via campus mail to the selected sample. In order for the respondents to return the survey to the researcher more easily, each survey had the return address on the reverse side. Therefore, respondents were instructed to re-fold and staple the survey so the researcher's return address was showing and send via campus mail.

Data Collection

Instrumentation

Part I, Personal Health Habits, the healthstyle portion of the research instrument was developed and pre-tested by the U.S. Department of Health and Human Services

(1981B) with data obtained from the National Health Interview Survey. Part II and Part III were developed in conjunction with the *1987 Needs Assessment of University Faculty for a Wellness Program* (Eckhart, 1987), the 1996 *Faculty's Participation in a University Wellness Program* (Duncan, 1996), the 1979 *National Survey of Personal Health Practices and Consequences* (U.S. Department of Health and Human Service, 1979), *Basic Data from Wave I of the National Survey of Personal Health Practices and Consequences* (U.S. Department of Health and Human Services, 1981A), this researcher, and researcher's graduate committee.

Part I, Personal Health Habits, of the questionnaire included 24 questions pertaining to six categories: cigarette smoking; alcohol/drug abuse; eating habits; exercise/fitness; stress control; and safety. Part II, Current Health Habits, included 22 questions pertaining to the non-academic employees' demographics, eating habits, general physical activity, usage of an exercise/fitness center, usage of OSU Wellness Center, tobacco usage, recent medical examinations, current medications, and sleeping habits. Part III, Interest and Participation in the OSU Wellness Center, questioned employees about their interest in the OSU Wellness Center, reasons for lack of participation, most convenient time to participate, programs they would prefer to attend, and incentives that would attract them to the Wellness Center.

A cover letter accompanied the questionnaire to explain the study and the incentives offered for returning the survey. Incentives were 50 Oklahoma State University Wellness Center T-shirts, Oklahoma State University Wellness Center Fitness Memberships, lunches at Taylor's Dining Room in the College of Human Environmental Sciences West, a gift certificate for use at any Joe's restaurant, two O.S.U. T-shirts from

DuPree's, an O.S.U. windbreaker from DuPree's, an O.S.U. sweatshirt from Chris' University Spirit, and two O.S.U. mouse pads from Chris' University Spirit. A copy of the cover letter, research instrument, and the incentive signature form can be found in Appendix C.

Procedure

Permission was obtained from the Institutional Review Board prior to circulation of the survey (Appendix D). The letters and instrument were sent via campus mail after labels were placed on the envelopes by OSU Central Mailing. The cover letters and surveys were mailed on February 11, 1998. Twelve days were allowed for completion of the survey and the incentive form with a return date of February 23, 1998. A message was printed in the Daily O'Collegian Classifieds and an announcement was posted in the CCmail Staff Bulletin as follow-up to the survey. A total of 311 usable surveys (34.5%) were returned.

Data Analysis

Data were coded and entered into a computer using the Statistical Analysis System (SAS) to tally and evaluate the scores of the participants (Helwig, 1983). Part I scores were tallied and evaluated using the scale provided by the Public Health Service (1981). Each of the six categories of part I was worth a total of 10 points. A score of 9-10 indicates "excellent" awareness of health, a score of 6-8 indicates "good" awareness of health with room for improvement, and a score of 5 or below indicates "poor" awareness

of health with health risks. Each subject was given a score for each of the six categories. If the participants never smoke they were given a score of 10 for the cigarette smoking category. If the participants never drink alcoholic beverages or use drugs they were also given a score of 10 for the alcohol and drug abuse category. Higher awareness scores correspond with better health habits. See Appendix E for the scoring system used for Part I.

The subjects' ages were classified into the following categories for the analyses: group 1: <25 years old, group 2: 25-34 years old, group 3: 35-44 years old, group 4: 45-54 years old, and group 5: 55-64 years old. Body Mass Index (BMI) was calculated for each subject using weight in kilograms (kg) and height in meters squared (m^2). The BMI values were then classified according to gender and value into the following categories: underweight (BMI <20.7 for men and BMI <19.1 for women), acceptable weight (BMI 20.7-27.8 for men and BMI 19.1-27.3 for women), overweight (BMI ≥27.8 for men and BMI ≥27.3 for women), severe overweight (BMI ≥31.1 for men and BMI ≥32.3 for women), and morbid obesity (BMI ≥45.4 for men and BMI ≥44.8) (Whitney & Rolfes, 1996).

Frequencies, percentages, correlations, t-tests, ANOVA, Duncan's Multiple Range Tests and chi-square tests were used to analyze the data to determine if associations exist between specific characteristics of respondents (Shavelson, 1996). The 0.05 level of significance was used to evaluate the data.

CHAPTER IV

RESULTS AND DISCUSSION

Characteristics of Respondents

Thirty-five percent (n=311) of the non-academic employees completed and returned the three-part questionnaire. The demographic characteristics of the sample population are presented in Table 1. Of the 311 respondents, 66.8% were female (n=207) and 33.2% were male (n=103). The ages ranged from 17 to 64 years of age with the largest number of respondents being 35-44 years of age (n=96) and the least amount of respondents being less than 25 years of age (n=16). The majority of the respondents (n=171, 55.5%) had 13 to 16 years of education, and only 17% of the subjects had 12 years or less of education. There were six employee classifications with the largest number of respondents in the Office Clerical (n=103) and Administrative and Professional (n=87) categories. The Body Mass Index values that corresponded with the height and weight responses ranged from being under weight (17.3) to being morbidly overweight with a value of 54.9. Fifty-nine percent of the respondents had acceptable BMI values (n=180), and 1.3% were considered morbidly overweight (n=4).

In 1994, the average BMI of adults in the U.S. was 26.3 (Kuczmarski, 1994). According to Burton & Foster (1994), this BMI is considered acceptable for men and women, however, Whitney & Rolfes (1996) consider a BMI of 26.3 as overweight for

Table 1. Demographic Characteristics of the Respondents

Characteristics	N	%
Gender		
Male	103	33.2
Female	207	66.8
Age (years)		
< 25	16	5.2
25-34	83	26.9
35-44	96	31.1
45-54	74	23.9
55-64	40	12.9
Education Level		
< High School	8	2.6
Some College	150	48.7
Undergraduate Degree	92	29.9
Graduate School	58	18.8
Employee Classification		
Office Clerical	103	34.1
Service Maintenance	24	7.9
Technical Paraprofessional	56	18.5
Trades	32	10.6
Administrative & Professional	87	28.8
Body Mass Index (BMI)		
Underweight	9	2.9
Acceptable weight	180	58.6
Overweight	64	20.8
Severely overweight	50	16.3
Morbidly overweight	4	1.3

men and women. The subjects' BMI values in this study were compared to the standards reported by Burton and Foster (1994). The majority of non-academic employees had BMI values that were acceptable, therefore, these data agree with the 1994 statistics for the average BMI of adults in the U.S. (Burton & Foster, 1994). The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objective that deals with obesity is to decrease the prevalence of overweight to no more than 20% among persons 20 years of age and older, however, the prevalence has actually increased from 26% in 1980 to

34% in 1991. The non-academic employees were also above 20% prevalence of overweight. This survey found 38.4% of the respondents to be considered overweight (Table 1).

Personal Health Habits

Personal Health Habit scores for smoking, safety, alcohol/drug use, eating, exercise, and stress are presented in Figures 1 through 6. Personal Health Habit results for individual questions are presented in Appendix F. Each of these categories were worth a total of 10 points. A score of 9-10 indicates "excellent" awareness of health, a score of 6-8 indicates "good" awareness of health with room for improvement, and a score of 5 or below indicates "poor" awareness of health with health risks.

The Personal Health Habit Scores for smoking are reported in Figure 1. A large majority of the subjects (81%) had excellent awareness of health regarding smoking (n=252), and only 19% of the subjects had poor awareness of health with regards to smoking (n=59).

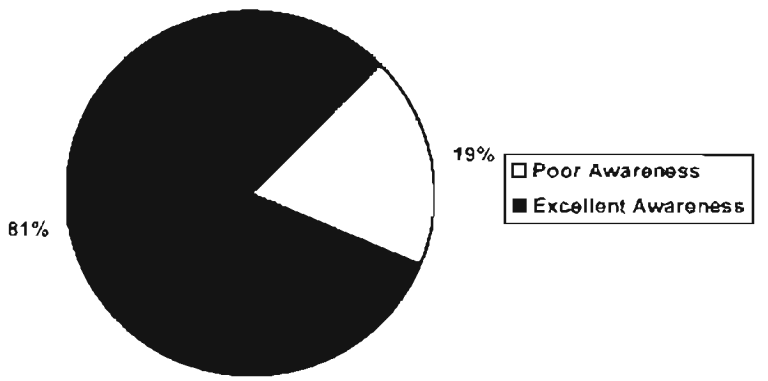

Figure 1. Personal Health Habit Scores for Smoking

According to Part I of the survey, 80% (n=248) of the subjects never smoke and did not respond to questions 1 through 3. These subjects were given 10 points as an indicator of excellent awareness of health for smoking. The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objective for tobacco use is to decrease cigarette smoking prevalence among people 20 years of age and older to 15%. The non-academic personnel smoking prevalence of 20% does not meet this goal. There is also a goal for the year 2000 to decrease smoking prevalence among blue collar workers to 20%. This survey did not separate the smoking prevalence by job classification. Of the non-academic personnel who smoke, 92.1% reported smoking more than 1 cigarette per week on a regular basis and 46.8% almost never smoke only low tar and nicotine cigarettes (Appendix F).

Results for the Personal Health Habits for safety are presented in Figure 2. A majority (77.9%) of the non-academic personnel had excellent awareness of health for safety issues. Most respondents reported *almost always* avoiding smoking in bed (n=38 of the current smokers), wearing a seat belt while driving in a car (n=257), and avoiding driving while under the influence of alcohol and other drugs (n=296). In addition, the respondents reported *almost always* obeying traffic rules and the speed limit when driving (n=243), and being careful when using potentially harmful products or substances (n=284) (Appendix F).

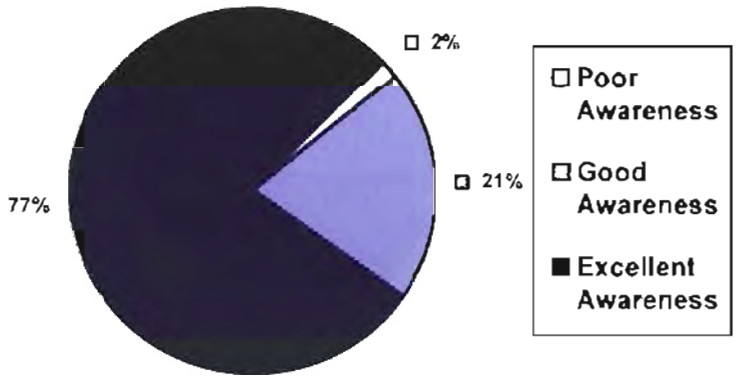

Figure 2. Personal Health Habit Scores for Safety

The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objectives for occupational safety and health address the areas of worksite occupant protection system mandates, and worksite health and safety. According to the *Healthy People 2000 Review 1992* (1993B) goals have not been met for worksite health and safety programs. Motor vehicle accidents can be tremendously reduced in severity and frequency by using seat belts, observing posted speed limits, and using motorcycle helmets (Mayhew, 1991). Eighty-three percent (n=257) of the non-academic employees almost always wear seat belts when driving in a car.

Personal Health Habits results for alcohol/drug use are found in Figure 3. Sixty percent of the non-academic personnel had excellent awareness of health (n=189), 26.7% had good awareness of health, and 12.6% had poor awareness of health for alcohol and drug use.

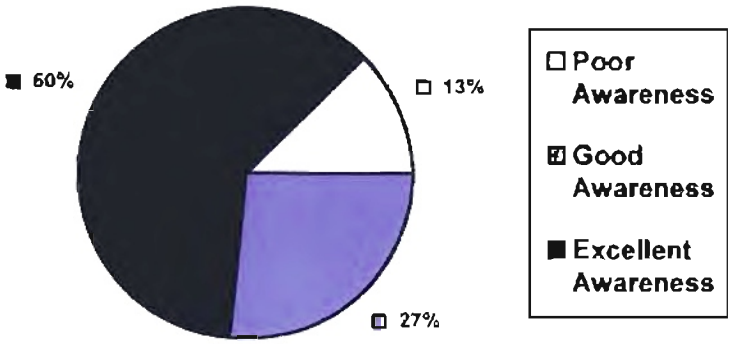

Figure 3. Personal Health Habit Scores for Alcohol & Drug Use

Again most of the respondents *almost always* drink no more than 1 or 2 alcoholic beverages (3 ounces) per day (n=133), and are careful not to drink alcohol when taking certain medicines, or when pregnant (n=237). Respondents *almost always* avoid using alcohol or other drugs (especially illegal drugs) as a way of handling stressful situations or the problems of life (n=234), and read and follow the label directions when using prescribed and over-the-counter drugs (n=288) (Appendix F).

The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objective for alcohol consumption is to decrease the amount of alcohol consumed to two gallons per capita. In 1990 the alcohol consumption in gallons per capita was 2.46. The non-academic personnel reported almost always drinking no more than of six ounces per day, therefore, they have met the year 2000 goal.

Results for Personal Health Habits for eating habits are found in Figure 4. Forty percent of the respondents (n=125) had poor awareness of health according to their eating habit scores and only 26% had excellent health awareness (n=81).

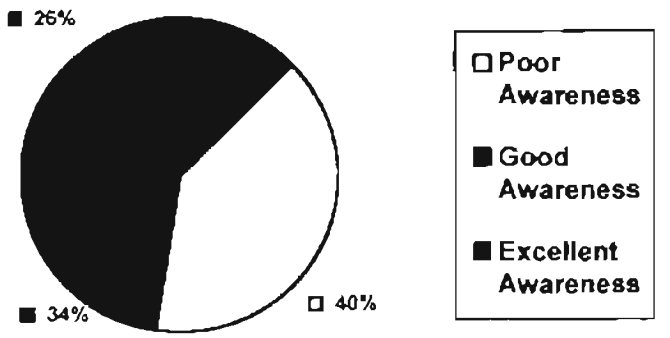

Figure 4. Personal Health Habit Scores for Eating Habits

Most of the respondents *almost always* eat a variety of foods each day, such as fruits and vegetables, whole grain breads and cereals, lean meats, dairy products, dry peas and beans, and nuts and seeds (n=163); and *sometimes* limit the amount of fat, saturated fat, and cholesterol in their diet (n=147). Respondents *almost always* limit the amount of salt in their diets by cooking with only small amounts, not adding salt at the table, and avoiding salty snacks (n=139); avoid eating too much sugar (n=155); and maintain a desired weight, avoiding overweight and underweight (n=132) (Appendix F).

According to the *Third Report on Nutrition Monitoring* (1995), total fat, saturated fatty acids, cholesterol, and sodium remain above the recommended levels for optimal nutrition. Only 47% of non-academic employees sometimes limit the amount of fat, saturated fat, and cholesterol in their diets and 43% almost always limit the amount of fat, saturated fat, and cholesterol in their diets. There are three *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objectives that apply to sodium consumption. The baseline data for the amount of Americans that prepare foods without adding salt was 54% in 1987 with the goal for the year 2000 as 65%. American adults who avoid using salt at the table was 68% in 1987, 55% in 1991 with 80% being the goal.

Adults who regularly purchase foods lower in sodium was 20% in 1987, 36% in 1991, and the goal is 40% (U.S. Department of Health and Human Services, 1993B). Forty-five percent of the non-academic employees limit the amount of salt consumed by cooking with only small amounts, not adding salt at the table, and avoiding salty snacks, so their salt intake may be approaching the recommended levels of sodium for optimal nutrition. The non-academic personnel have not met the year 2000 goals for cooking with salt, adding salt at the table, and avoiding salty snacks.

The Personal Health Habit scores for exercise are reported in Figure 5. More than half (n=206) of the respondents had poor awareness of health with regards to exercise and physical fitness, and only 11.9% had an excellent awareness of health for exercise and physical fitness (n=37).

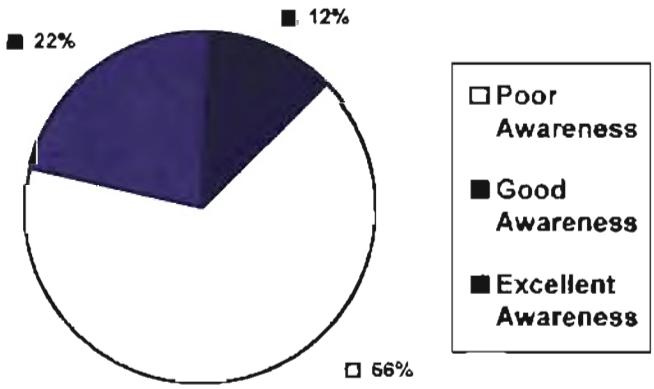

Figure 5. Personal Health Habit Scores for Exercise

Most of the respondents reported limited participation in vigorous exercise for 15-30 minutes at least three times a week (n=126), and *almost never* doing exercises that enhance muscle tone for 15-30 minutes at least three times a week (n=151). Respondents

also reported *sometimes* using part of leisure time for participating in individual, family, or team activities that increase fitness level (n=150) (Appendix F).

One of the *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objectives for muscular strength, endurance, and flexibility is to increase the number of people ages 18 to 64 years of age who weight lift to 40%. Only 16% of people ages 18 to 64 years of age were lifting weights in 1991. Forty-nine percent (n=151) of the respondents are almost never doing exercises that enhance muscle tone. Therefore, the non-academic employees are also not meeting the year 2000 goal for weight lifting. Duncan (1996) reported 41% of the Oklahoma State University faculty had poor awareness of health in regards to exercise and only 26.7% had excellent awareness. The faculty in 1996 had less respondents who reported poor awareness of health than the non-academic respondents and more respondents who had reported excellent awareness of health in regards to exercise. Therefore, the data appears to show that the faculty at Oklahoma State University had better awareness of healthy exercise habits than the non-academic personnel.

Stress awareness according to the Personal Health Habits scores for non-academic personnel are presented in Figure 6. Only 29.6% of the respondents (n=92) had excellent awareness of health and 52.3% had good awareness of health for stress (n=162). Most of the respondents reported *almost always* enjoying their job (n=202), and finding it easy to relax and express their feelings freely (n=145). They reported *sometimes* recognizing early and preparing for events or situations likely to be stressful (n=159), and *almost always* having close friends, relatives, or others whom they can talk to about personal

matters and call on for help when needed (n=219). Respondents reported *almost always* participating in group activities (n=136) (Appendix F).

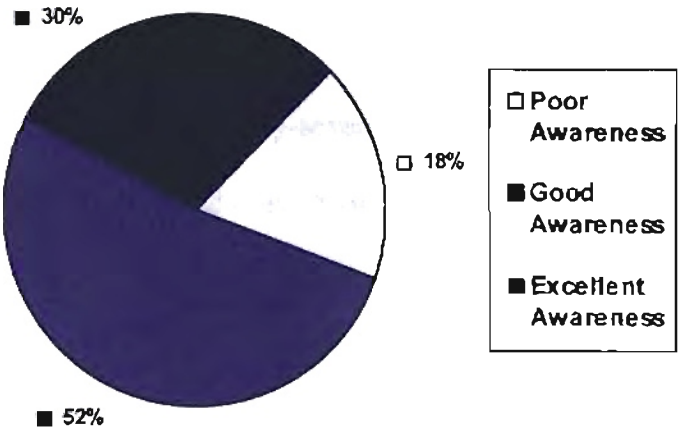

Figure 6. Personal Health Habit Scores for Stress

A survey distributed by Murphy *et al.* (1996) found that 46% of the respondents reported stressful job situations and 27% reported job stress to be the single largest stressor in life. This researcher surveyed the employees' ability to cope with stressful situations in life, since being able to cope with this stress is a major contributor to job satisfaction. The majority of non-academic personnel at Oklahoma State University reported good awareness of stress with need for improvement, therefore, these employees were able to cope with stressful situations most of the time. Forty-four percent of the faculty at Oklahoma State University, according to Duncan (1996), had good awareness of stress, while more faculty had excellent awareness of stress (43.3%) compared to the non-academic employees (29.6%).

Eating Habits

The eating habits of the sample population concerning meal pattern are presented in Figure 7. The majority (58.4%) of the respondents ate three meals per day (n=181) with only 14 respondents eating one meal per day (4.5%). Results for breakfast habits are presented in Figure 8. Fifty-seven percent of the subjects ate breakfast five to seven days per week (n=177), and only 28 subjects never ate breakfast (n=9).

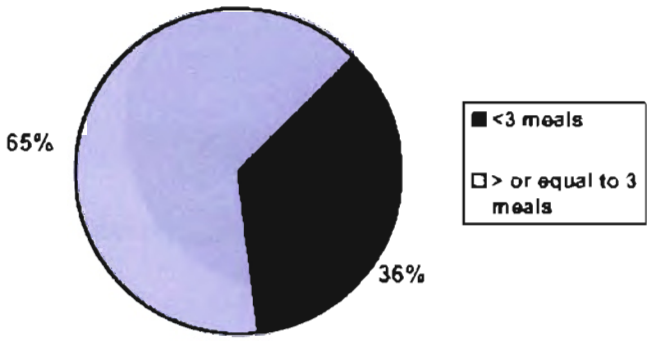

Figure 7. Number of Meals Eaten per day

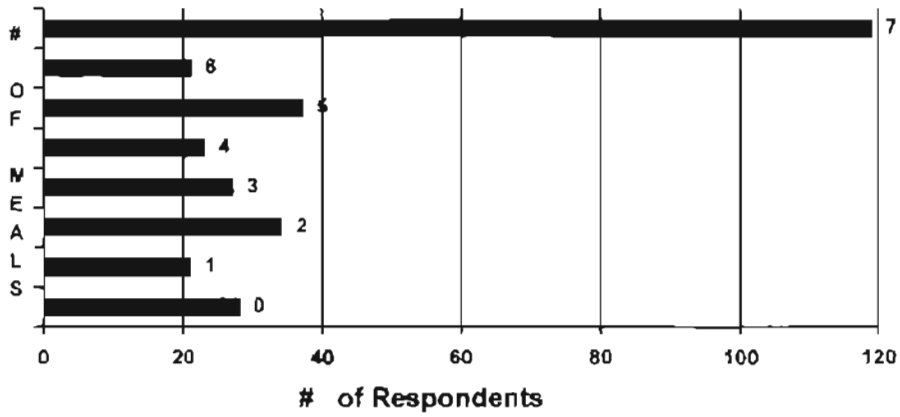

Figure 8. Non-academic Personnel's Breakfast Frequency per week

Snacking habits for respondents are presented in Figure 9. Sixty-three percent reported snacking between meals, and 80.6% are not currently on a special diet (n=250). Of the 60 respondent who are currently on a special diet 30 are following a low fat diet and 25 were on a low calorie diet (Table 2). Most of the respondents (90.6%) eat zero to five meals per week in a restaurant (n=281).

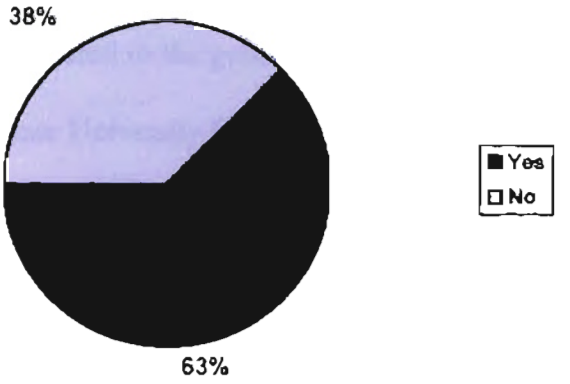

Figure 9. Do you usually eat snacks between meals?

Table 2. Non-academic Employees Currently on a Special Diet

Diets	**N**	**%**
Currently on a special diet	60	19.4
Not on a special diet	250	80.6
Low fat	30	9.7
Low calorie or weight loss	25	8.1
Diabetic or low sugar	17	5.5
High Fiber	11	3.5
Low salt	6	1.9
High Protein	2	0.6
Ulcer (bland)	1	0.3
Vegetarian	1	0.3
No milk	1	0.3
Low cholesterol	1	0.3

According to the American Dietetic Association 1997 Nutrition Trends Survey (1997), 55% of Americans 55 years of age and older report that "they do all they can to eat well." In contrast, only 28% of Americans 25-34 years report this same information. Thirty-two percent of Americans reported eating out frequently with only 12% reporting never eating out. Almost 91% of the non-academic employees eat zero to five meals per week in a restaurant, therefore, the respondents had better eating habits in regards to eating out compared to the general population. When comparing the eating habits of the Oklahoma State University faculty with the non-academic personnel, two-thirds (67%) of the faculty reported eating three meals per day while 58.4% of the non-academic respondents reported eating three meals per day (Duncan, 1996). Eating behaviors needed improvement with the faculty and the non-academic employees at Oklahoma State University.

Exercise/Fitness

The results for general physical activity during the previous month are reported in Table 3. Thirty-six percent of the respondents (n= 110) reported the following description of their general physical activity during the previous month, "I do not have a regular exercise program, but I walk for pleasure, routinely using the stairs, and occasionally exercise sufficiently to cause heavy breathing or perspiration." Only 13 respondents (4.2%) reported their general physical activity during the previous month as "I run over 10 miles per week or spend over 3 hours per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball." Seventy respondents (22.7%) reported having a physical problem or limitation that affects their ability to exercise.

Participation in an exercise/fitness center was reported by 78% of the respondents (n=243). This statistic contrasts with the reported general physical activity during the previous month. Only 22 respondents participated at the OSU Wellness Center's exercise/fitness center (7.1%) (Figure 10). Participation in the OSU Wellness Center is reported in Table 4.

The most participation in the OSU Wellness Center services was reported as 1,643 total visits to the OSU fitness center in the last 12 months. Using this data, the average number of visits per employee per year was equal to five. The least amount of participation was Biometrics™ (n=1) and treadmill testing (n=3). Sixty-four percent of the employees attended one or more of the programs, and 10% attended the fitness center. Only 7.1% (n=22) of the non-academic employees go to the OSU Wellness Center fitness facility. According to Anspaugh *et al.* (1996), participation rates in worksite health promotion programs that are presented on-site range from 20 to 40% and off-site program participation are estimated at 10 to 20%. The non-academic personnel appear to have similar participation rates to the off-site participation estimate. According to Lewis, Huebner, and Yarborough (1996), 37% of the eligible employees took the Health Risk Appraisal that was offered at a worksite health promotion program. Therefore, this low participation is similar to the participation rate found in Lewis *et al.* (1996) study.

Sixty percent of adults in the U.S. do not engage in regular or adequate levels of physical activity to provide minimal health affects (U.S. Department of Health and Human Services, 1997), and 25% of Americans are not physically active at all. This researcher found 54.6% of the survey respondents engage in regular levels of physical activity to provide minimal health affects, and only 7.1% of the Oklahoma State University non-

Table 3. General Physical Activity During the Previous Month for Non-academic Personnel

Level of activity	N	%
Level 0 - I do not have a regular exercise program, and I avoid walking or exertion, always using elevators whenever possible instead of walking.	22	7.1
Level 1 - I do not have a regular exercise program, but I walk for pleasure, routinely use stairs, and occasionally exercise sufficiently to cause heavy breathing or perspiration.	110	35.6
Level 2 - I perform 10-60 minutes per week of modest physical activity such as golf, horseback riding, calisthenics, table tennis, bowling, weight lifting, or yard work.	36	11.7
Level 3 - I perform over 1 hour per week of modest physical activity such as golf, horseback riding, calisthenics, table tennis, bowling, weight lifting, or yard work.	78	25.2
Level 4 - I run less than 1 mile per week or spend less than 30 minutes per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.	5	1.6
Level 5- I run 1-5 miles per week or spend 30-60 minutes per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.	12	3.9
Level 6- I run 5-10 miles per week or spend 1-3 hours per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.	33	10.7
Level 7- I run over 10 miles per week or spend over 3 hours per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.	13	4.2

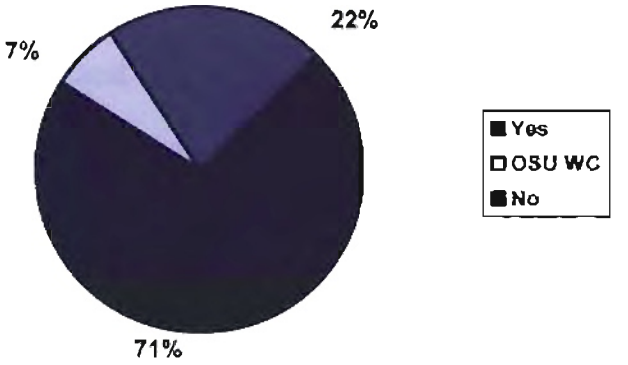

Figure 10. Participation in an Exercise/Fitness Center and OSU Wellness Fitness Center

Table 4. Estimated Usage of the OSU Wellness Center Programs by the Non-academic Personnel in the Last 12 Months

Responses	Wellness Programs
1643	Fitness Center
256	Physical Therapy
159	Health Screening
118	Personal Training
96	Cardiac Rehabilitation
52	Employee Assistance Program(EAP)
37	Physical Exams
34	Various Blood Tests
33	Back Rehabilitation
19	Wellness Education Classes
14	Nutrition Counseling
7	Cooking Classes
3	Acute Care Clinic
3	Treadmill Testing
2	Massage
2	True Colors
1	Biometrics™
1	Pulmonary Rehabilitation

academic employees reported no physical activity. Approximately 15% of U.S. adults engage in vigorous physical activity three times per week for at least 20 minutes, and approximately 22% of adults participate five times per week for at least 30 minutes in

physical activity of various intensities. Almost 4% of the respondents participate in vigorous physical activity three times per week for at least 20 minutes, which is lower than the U.S. adult percentage. Almost 15% of the non-academic employees reported participation in vigorous physical activity five times per week for at least 30 minutes. More than half of the faculty at Oklahoma State University reported almost always exercising for 15 to 30 minutes at least three times per week (Duncan, 1996). The faculty appear to have a higher percentage of individuals who practice better exercise habits compared to the U.S. adult population.

Smoking and Tobacco Use

Sixteen percent of the non-academic personnel were currently using tobacco (n=49). Of these 49 respondents, 81% (n=43) reported using cigarettes, no one uses a pipe, 6% (n=3) smoke cigars, and 13% (n=2) use smokeless tobacco (Figure 11).

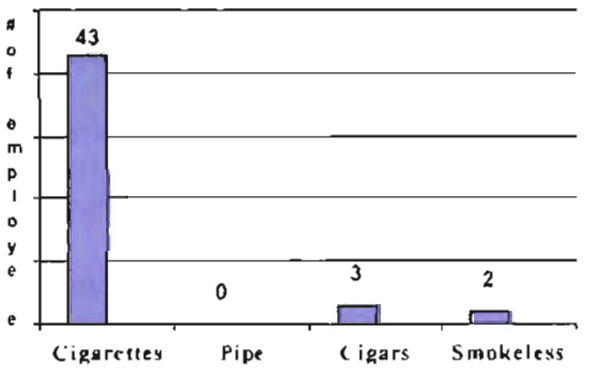

Figure 11. Non-academic Employees' Current Tobacco Use

Forty-nine percent (n=151) of the subjects reported previous tobacco product use with 60% of these tobacco products being cigarettes (n=133), 10% pipe (n=22), 18% cigars

(n=41), and 12% smokeless tobacco (n=26). Tobacco cessation efforts of the non-academic personnel are presented in Table 5.

During the past two years 62.3% of the tobacco users (n=43) made a serious attempt to stop tobacco use, and 37.7% have not made a serious attempt (n=26). Of the tobacco users, 12.4% reported attending a smoking/tobacco cessation class or program (n=13) with 87.6% reporting never attending (n=92). *Healthy People 2000* (U.S.

Table 5. Tobacco Cessation Efforts for Respondents

Cessation Results	**Yes**	**No**
Tobacco users who made a serious attempt to stop tobacco use in the past two years	62.3%	37.7%
Tobacco users who attended a smoking/tobacco cessation class or program	12.4%	87.6%

Department of Health and Human Services, 1991) objectives for smoking cessation are to increase the percentage of people who attempt to quit tobacco use to 50%. Twenty-six percent of Americans 20 years of age and older were reported as cigarette smokers in 1991, and only 39% of the smokers in 1991 attempted to quit (U.S. Department of Health and Human Services, 1993). The non-academic employees who smoke have met the smoking cessation goal for 2000 by having 62.3% of the tobacco users attempt to quit.

Current Health Status

Seventy-seven percent of the respondents (n=239) have had a routine physical examination within the past two years. Twenty-eight percent of the respondents (n=88) reported currently being treated for a health problem, while a large majority (72%) of the respondents are not currently being treated for a health problem (n=222). Results for regular medication use are reported in Table 6. Fifty-seven percent of the respondents (n=174) are taking medications on a regular basis. Vitamin/mineral supplements had the highest usage (24%) and over-the-counter weight loss drugs had no reported usage. Ninety-eight percent of the respondents (n=301) have never been told that they have heart disease, and only 24% of the respondents (n=75) have had a cardiovascular evaluation in the last five years with a majority (53%) of these evaluations being resting EKG evaluations (n=59). Most of the respondents (61%) reported seven to eight hours of continuous sleep (n=186), 38% reported 6 hours or less of continuous sleep, and only 2% reported 9 hours or more (n=5).

According to the American Dietetic Association 1997 Nutrition Trends Survey (1997), 35% of Americans believed vitamin supplements are necessary to ensure proper health. Twenty-three percent (n=72) of the non-academic employees reported taking vitamin supplements on a regular basis. According to *Vitality Magazine* (Wells, 1998), estrogens were the number one drug paid for by claims for OSU/A&M employees for 1996. Cough/cold/allergy medications, antidepressants, antihypertensives, and penicillins were also included in the top five drug types for which claims were paid for OSU/A&M employees for 1996. According to this survey in the Spring of 1998, the number one prescription drug for the non-academic employees was also hormone replacement

Table 6. Non-academic Personnel's Medication Use on a Regular Basis

Medications	N	%
Take medications on a regular basis	174	56.7
Do not take medications on a regular basis	133	43.3
Vitamin/mineral supplement	72	23.5
Pain reliever (Tylenol, Aspirin, Ibuprofen)	52	13.9
Hormone replacement therapy	49	16.0
Blood pressure medicine	39	12.7
Antidepressant drug	25	8.1
Antacid	25	8.1
Birth control	19	6.2
Aspirin for prevention of heart attack	16	5.2
Thyroid medication	14	4.6
Insulin or drug to lower blood sugar	13	4.2
Antihistamine/allergy/decongestant	11	3.6
Cholesterol lowering drug	10	3.3
Asthma inhaler	8	2.6
Prescription weight loss drug	2	0.7
Over-the-counter weight loss drug	0	0

Other Medications listed: Acid blockers, sleep medication, herbs, acne medication, Fasomax, Citrucel laxative, Dilantin, Neurotonin, anti-anxiety medication, antibiotic, cancer drug

therapy drugs. Blood pressure medicine, antidepressant drugs, birth control pills, and thyroid medications were the other drugs in the top five used by non-academic employees.

Coping with stress has been found to be related to rest and the amount of sleep a person gets during the night. Hafen & Hoeger (1994) have given guidelines to follow to ensure that an individual is receiving the proper amount of rest. They recommend that most people need six to eight hours of sleep per night, so six to eight hours per night would be the goal. A majority (61%) of the non-academic personnel are receiving the recommended six to eight hours of sleep for proper rest.

Interest and Participation in the OSU Wellness Center

Interest in the OSU Wellness Program results are reported in Figure 12.

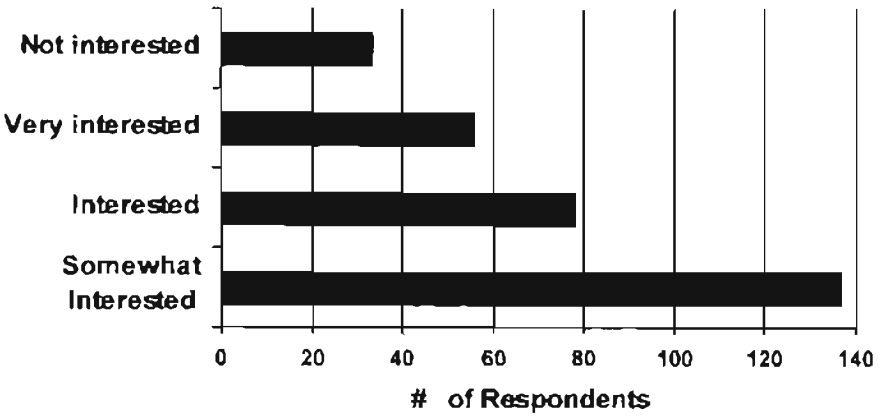

Figure 12. Non-academic Personnel's Interest in the OSU Wellness Program

Forty-five percent of the respondents (n=137) reported being somewhat interested and only 11% (n=33) reported non-interest in the OSU Wellness Center. Barriers to participation in the OSU Wellness Center programs are reported in Table 7.

Table 7. Barriers to Participation in the OSU Wellness Center Programs

Barriers	N	%
Lack of time	138	45.0
Cost	104	33.9
Inconvenient time	41	13.4
Unaware of the Wellness Center	40	13.0
Participate at another facility	27	8.8
Uninterested in the programs	27	8.8
Inconvenient location	22	7.2
Lack of parking	15	4.9
No effort made to participate	4	1.3
Unfriendly staff & atmosphere	4	1.3

Other barriers: pregnant, too crowded, poor health, lack of child care, lazy, lack of motivation, lack of energy.

The largest barriers to participation were reported as lack of time and cost of the programs. Forty-five percent of the respondents (n=139) reported early evenings (5:00-7:00 p.m.), 27% of the respondents (n=84) reported weekends, 19% of the respondents reported (n=30) lunch time (11:00-1:00 p.m.), and 10% of the respondents (n=30) reported early morning (6:00-7:30 a.m.) as the most convenient time for participation in a wellness program. The most convenient times for faculty to participate in wellness programs were lunchtime and early evening. It appears lunchtime was considered more convenient for faculty than non-academic employees (Duncan, 1996).

Preferences of the non-academic personnel in wellness programs are reported in Table 8. The respondents reported fitness/exercise programs as the most preferred (n=221) followed by weight management (n=131) and health screening (n=105). The Oklahoma State University faculty reported the exercise/fitness programs as their top preference. The Wellness Center Fitness Center was reported by the faculty as the most utilized wellness program (Duncan, 1996). These 1996 results correspond with the results from the non-academic employees.

Incentive results are reported in Table 9. Sixty-one percent of the respondents (n=188) reported a "two for one admission special" and only 2% of the respondents (n=6) reported a contest would attract them to participate in the OSU Wellness Center.

Table 8. Preferred Wellness Programs Indicated by Non-academic Personnel

Responses	Wellness Programs
221	Fitness/exercise
131	Weight Management
105	Health Screening
74	Stress Management
73	Nutrition Awareness
64	Cooking Classes
43	Time Management
37	Back Rehabilitation
24	Tobacco Cessation
11	Safety
2	Alcohol/drug misuse
2	Weight/Strength Training
1	Pulmonary Rehabilitation
1	Career & Credit Counseling
1	Menopause Awareness

Walsh (1988) reported that the number one reason found for lack of participation in worksite health promotion programs was "being too busy." This study supports this finding (Table 7). Welch Allyn discovered their comprehensive incentive-based program to be successful in increasing participation (Garafalo, 1994). Therefore, a combination of the preferred incentives may enhance participation of the non-academic personnel. Reduced price, two for one admission specials, and free gifts may all work together to motivate non-academic employees to participate in wellness program offerings. A reduced price may also break down a barrier to participation.

Hypotheses were tested and statistical analyses were performed and are presented in Appendix G.

Table 9. Incentives to Attract Participation in the OSU Wellness Center

Incentives	**N**	**%**
Reduced price	188	61.0
Two for one admission specials	80	26.0
Free gifts such as T-shirts & water bottles	40	13.0
Better/Later hours	15	4.8
Fitness Challenge	13	4.2
Contest	6	1.9
Time off from work to participate	3	1.0
More equipment	1	0.3
More team sports	1	0.3
Goal based training	1	0.3
Heart attack	1	0.3
Vegetarian cooking classes	1	0.3
Free Day Care	1	0.3

CHAPTER V

SUMMARY, RECOMMENDATIONS, AND IMPLICATIONS

Summary

The purpose of this study was to evaluate the non-academic personnel's personal health habits, health status, and interests and participation in a worksite wellness program. The following objectives were established: to identify personal health habits and current health status of the non-academic employees at Oklahoma State University; to find the interests, level of participation, program preferences, incentives to improve participation, most convenient time to participate, and reasons for lack of participation; and to recommend topic areas of health promotion, based on results of the study, for non-academic employees to the Oklahoma State University Wellness Center Director and staff.

Respondents were predominantly female between 35 and 44 years of age. A majority of the non-academic employees had 13 to 15 years of education and BMI values associated with acceptable weight. One-third of the respondents were classified as office clerical employees and one-third were administrative and professional employees. Results of Part I of the survey showed that eating habits, exercise/fitness habits, and stress control were the areas that needed the most improvement in health awareness. Almost all

respondents wear seat belts, do not smoke cigarettes, and drink less than two alcoholic beverages per day.

Respondents who ate breakfast seven times per week, did not snack during the day, were on a special diet, and only ate in a restaurant zero to five times per week had higher eating habit scores. More than half of the non-academic employees eat three meals per day and sleep between seven to eight hours per day. More than two-thirds of the respondents use an exercise/fitness center. Approximately 55% of the non-academic personnel engage in regular levels of physical activity to provide minimal health affects, and only 7% of the respondents reported no physical activity. Only 16% of the employees reported currently using tobacco, and more than half of these tobacco users reported that they made a serious attempt to stop tobacco use during the past two years with only 12% of the employees attending smoking/tobacco cessation class. More than half of the respondents attempt to control their stress by participating in group activities and talking to close friends, relatives or others. More than 75% of the respondents have had a routine physical examination in the past two years, and only 28% are currently having health problems.

Part three of the survey determined respondents' interest and participation regarding wellness programs. Most non-academic personnel were somewhat interested in the OSU Wellness Program 45.1% (n=137). The non-academic employees reported the fitness/exercise program as the most preferred and the most utilized in the last 12 months. Lack of time was the most common reason for not participating in the OSU Wellness Center programs (n=138). The preferred time for participation was early evening, 5:00 - 7:00 p.m.. The non-academic personnel preferred the fitness/exercise programs, and

indicated that reduced price and two for one admissions specials were the most favorable incentives to attract participation in the OSU Wellness Center programs. Females tended to have more interest in the OSU Wellness Center Program and preferred to participate at lunch time compared to males. Respondents with 17 or more years of education tended to agree that lack of time was not a barrier to participation and younger age groups tended to prefer participating in the early evening.

Recommendations and Implications

The following recommendations are based on this study's findings and offer suggestions for additional research.

1) Send out the survey twice to allow for a larger response rate. This follow-up mailing could also be as simple as a post card to serve as a reminder to return the questionnaire.

2) Revise Part I of the survey due to written comments from the respondents that stated Part I of the survey was difficult to understand. Revisions would make the questions easier to read and understand.

3) Revise the survey question regarding physical examinations in the past two years to clarify whether this examination is a routine preventative visit or a sick care visit. Develop two questions out of this one question to compare preventative and sick care examinations.

4) Using statistical analyses compare smoking prevalence and job classification, this association was seen in the literature, but the researcher did not have similar data.

5) This study provides baseline data for non-academic employees at Oklahoma State University, and it is suggested that the non-academic employees be surveyed every five years to maintain an accurate database of current non-academic personnel's needs and interests concerning the wellness programs. Current health status data are also needed in order to offer programs that are geared toward this population. The results and analyses from these follow-up studies will be used to target the needs of the current non-academic employees and may lead to a higher participation rate, higher chance of positive outcomes, and a higher return rate for the OSU Wellness Center programs.

6) Incentives should be offered to non-academic employees to increase participation. Reduced prices, two for one reduced price admission specials, and free gifts such as T-shirts and water bottles were the most popular incentives according to the non-academic employees. However, the most common barrier to participation was lack of time, therefore, this barrier needs to be addressed. Employees at OSU should be given time off, flex time, and use of sick time to participate in the OSU Wellness Center programs.

7) Students and faculty must also be surveyed every five years to maintain current databases for these populations. Survey results from students, faculty, and non-academic employees would give the OSU Wellness Center Director and staff a comprehensive look at needs and interests for the campus as a whole.

8) Due to the low participation rate (4.2%) reported for non-academic employees' participation in tobacco cessation class or program, the OSU Wellness Center smoking cessation program may need additional marketing strategies to increase involvement. As recommended by Nelson *et al.* (1994), occupational health professionals during health

screenings and assessments are recommended to record smoking status, counsel employees on smoking cessation at each visit, discuss adverse effects of smoking and benefits of quitting, provide written material on quitting, encourage employees to set a quit date, and provide follow up support. These recommendation should also be adopted by the OSU Wellness Center staff to be used during health screenings.

Results from this study will be reported to the OSU Wellness Center Director and staff to be used as a needs assessment for their current marketing strategies to increase participation among the non-academic employees. The low participation rate of non-academic employees in the OSU Wellness Center programs may be due to the fact that this population does not make time for participation. The barriers to participation for this population must be addressed to allow initial participation. The most convenient time for non-academic personnel was reported as early evening from 5:00 to 7:00 p.m., and there should be more programs offered at this time. For initiating participation, OSU employees should be offered time off from work, and use of flex time and sick days for participating in the OSU Wellness Center programs. To maintain participation reduced prices, two for one admissions specials, and free gifts should be used by the OSU Wellness Center.

The University community should also adopt certain marketing strategies to assist the OSU Wellness Center in promoting its programs. The Transtheoretical Model is used by health promotion professionals, and it explains peoples' readiness for change with stages (U.S. Department of Health and Human Services, 1996). This model should be used by the OSU Wellness Center to develop and adjust programs according to the participants' readiness for change. The staff would measure the participants' readiness for change with the use of questionnaires, personal interviews, and peer groups.

The university should allow time off from work, pay-check benefits, insurance benefits, and incentives for participation in the OSU Wellness Center programs. Each college or department at OSU should adopt policies and strategies to assist the OSU Wellness Center in promoting its programs and assisting their employees in the adoption of healthier lifestyle habits. The departments should participate in a college wide participation contest with prizes and incentives. Each department should participate in the programs as a large group and encourage their fellow co-workers to participate.

As the year 2000 approaches, adopting healthy lifestyle behaviors is becoming a necessity for Americans. In order to avoid chronic disease, improve quality of life, and control health care costs, individuals must take responsibility for their own lifestyle behaviors. The *Healthy People 2000* (U.S. Department of Health and Human Services, 1991) objectives are going to be short of their goals if Americans continue to practice unhealthy lifestyle habits. Health promotion and wellness programs in the worksite can assist Americans in achieving these goals. It is also the responsibility of family members, peers, teachers, employers, co-workers, health providers, and community professionals to support individuals in changing unhealthy behaviors.

Addressing Americans' health perceptions and concerns about wellness programming are futuristic needs for the U.S. Fear of sudden death and becoming healthier are no longer motivators for many Americans. More research and exploration are needed in the area of motivation to discover what will motivate Americans to adopt healthy lifestyle behaviors. As stated before, in order to reduce chronic disease Americans and their communities must promote individual healthy behaviors, expand the use of early detection practices, provide young people with health education in schools and community

settings, and achieve healthier communities (U.S. Department of Health and Human Services, 1997). This path toward wellness requires motivation and programming that meets the special needs and interests of all Americans.

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APPENDICES

APPENDIX A

RECOMMENDED DIETARY ALLOWANCE

FOOD AND NUTRITION BOARD, NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

RECOMMENDED DIETARY ALLOWANCES,[a] Revised 1989

Designed for the maintenance of good nutrition of practically all healthy people in the United States

Category	Age (years) or Condition	Weight[b] (kg)	Weight[b] (lb)	Height[b] (cm)	Height[b] (in)	Protein (g)	Fat-Soluble Vitamins: Vitamin A (μg re)[c]	Vitamin D (μg)[d]	Vitamin E (mg α-TE)[e]	Vitamin K (μg)	Water-Soluble Vitamins: Vitamin C (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg ne)[f]	Vitamin B_6 (mg)	Folate (μg)	Vitamin B_{12} (μg)	Minerals: Calcium (mg)	Phosphorus (mg)	Magnesium (mg)	Iron (mg)	Zinc (mg)	Iodine (μg)	Selenium (μg)
Infants	0.0–0.5	6	13	60	24	13	375	7.5	3	5	30	0.3	0.4	5	0.3	25	0.3	400	300	40	6	5	40	10
	0.5–1.0	9	20	71	28	14	375	10	4	10	35	0.4	0.5	6	0.6	35	0.5	600	500	60	10	5[g]	50	15
Children	1–3	13	29	90	35	16	400	10	6	15	40	0.7	0.8	9	1.0	50	0.7	800	800	80	10	10	70	20
	4–6	20	44	112	44	24	500	10	7	20	45	0.9	1.1	12	1.1	75	1.0	800	800	120	10	10	90	20
	7–10	28	62	132	52	28	700	10	7	30	45	1.0	1.2	13	1.4	100	1.4	800	800	170	10	10	120	30
Males	11–14	45	99	157	62	45	1,000	10	10	45	50	1.3	1.5	17	1.7	150	2.0	1,200	1,200	270	12	15	150	40
	15–18	66	145	176	69	59	1,000	10	10	65	60	1.5	1.8	20	2.0	200	2.0	1,200	1,200	400	12	15	150	50
	19–24	72	160	177	70	58	1,000	10	10	70	60	1.5	1.7	19	2.0	200	2.0	1,200	1,200	350	10	15	150	70
	25–50	79	174	176	70	63	1,000	5	10	80	60	1.5	1.7	19	2.0	200	2.0	800	800	350	10	15	150	70
	51+	77	170	173	68	63	1,000	5	10	80	60	1.2	1.4	15	2.0	200	2.0	800	800	350	10	15	150	70
Females	11–14	46	101	157	62	46	800	10	8	45	50	1.1	1.3	15	1.4	150	2.0	1,200	1,200	280	15	12	150	45
	15–18	55	120	163	64	44	800	10	8	55	60	1.1	1.3	15	1.5	180	2.0	1,200	1,200	300	15	12	150	50
	19–24	58	128	164	65	46	800	10	8	60	60	1.1	1.5	15	1.6	180	2.0	1,200	1,200	280	15	12	150	55
	25–50	63	138	163	64	50	800	5	8	65	60	1.1	1.3	15	1.6	180	2.0	800	800	280	15	12	150	55
	51+	65	143	160	63	50	800	5	8	65	60	1.0	1.2	13	1.6	180	2.0	800	800	280	10	12	150	55
Pregnant						60	800	10	10	65	70	1.5	1.6	17	2.2	400	2.2	1,200	1,200	300	30	15	175	65
Lactating	1st 6 months					65	1,300	10	12	65	95	1.6	1.8	20	2.1	280	2.6	1,200	1,200	355	15	19	200	75
	2nd 6 months					62	1,200	10	11	65	90	1.6	1.7	20	2.1	260	2.6	1,200	1,200	340	15	16	200	75

[a] The allowances, expressed as average daily intakes over time, are intended to provide for individual variations among most normal persons as they live in the United States under usual environmental stresses. Diets should be based on a variety of common foods in order to provide other nutrients for which human requirements have been less well defined. See text for detailed discussion of allowances and of nutrients not tabulated.

[b] Weights and heights of Reference Adults are actual medians for the U.S. population of the designated age, as reported by NHANES II. The median weights and heights of those under 19 years of age were taken from Hamill et al. (1979) (see pages 16–17). The use of these figures does not imply that the height-to-weight ratios are ideal.

[c] Retinol equivalents. 1 retinol equivalent = 1 μg retinol or 6 μg β-carotene. See text for calculation of vitamin A activity of diets as retinol equivalents.

[d] As cholecalciferol. 10 μg cholecalciferol = 400 IU of vitamin D.

[e] α-Tocopherol equivalents. 1 mg d-α tocopherol = 1 α-TE. See text for variation in allowances and calculation of vitamin E activity of the diet as α-tocopherol equivalents.

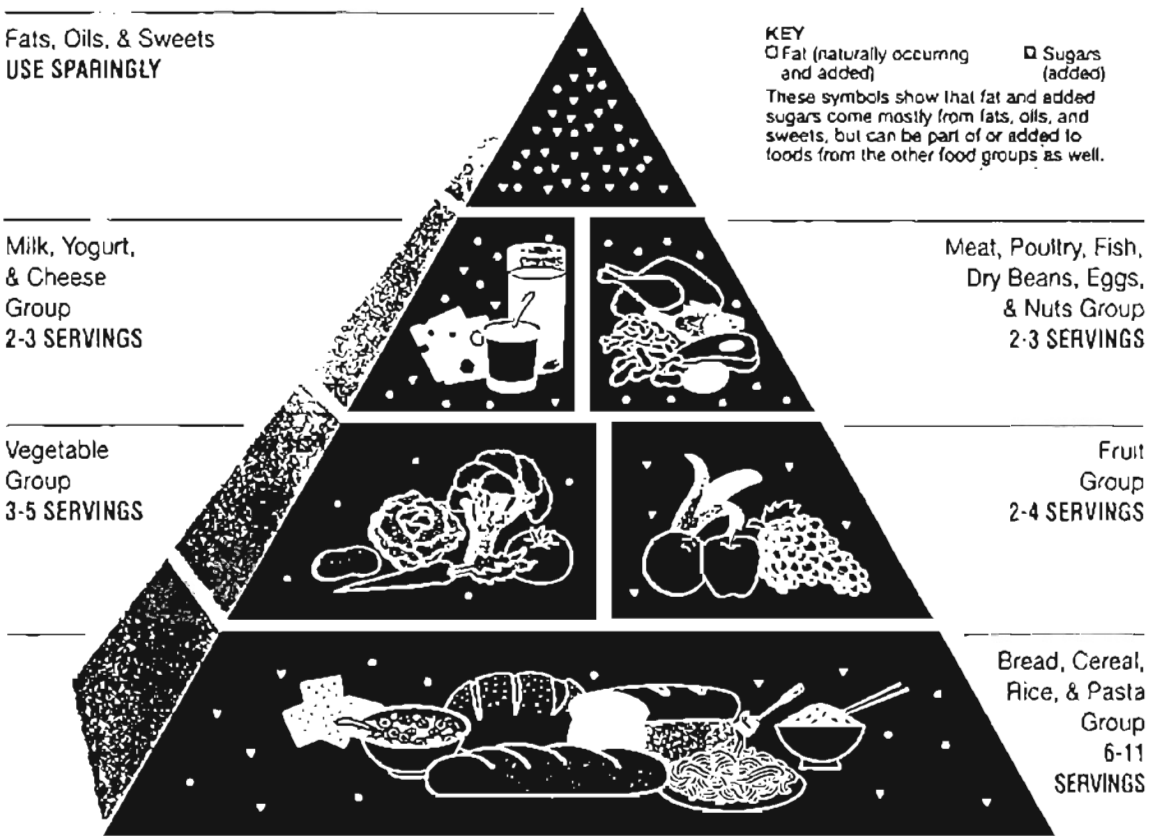
[f] 1 mg (niacin equivalent) is equal to 1 mg of niacin or 60 mg of dietary tryptophan.

APPENDIX B

FOOD GUIDE PYRAMID

Food Guide Pyramid

A Guide to Daily Food Choices



SOURCE: U.S. Department of Agriculture/U.S. Department of Health and Human Services

Use the Food Guide Pyramid to help you eat better every day. . .the Dietary Guidelines way. Start with plenty of Breads, Cereals, Rice, and Pasta; Vegetables, and Fruits. Add two to three servings from the Milk group and two to three servings from the Meat group

Each of these food groups provides some, but not all, of the nutrients you need. No one food group is more important than another — for good health you need them all. Go easy on fats, oils, and sweets, the foods in the small tip of the Pyramid.

To order a copy of "The Food Guide Pyramid" booklet, send a $1.00 check or money order made out to the Superintendent of Documents to: Consumer Information Center, Department 159-Y, Pueblo, Colorado 81009

U.S. Department of Agriculture, Human Nutrition Information Service. August 1992. Leaflet No. 572

APPENDIX C

CORRESPONDENCE AND RESEARCH INSTRUMENT

OKLAHOMA STATE UNIVERSITY

OSU

Department of Nutritional Sciences
425 Human Environmental Sciences
Stillwater, Oklahoma 74078-6141
405-744-5040, fax 405 744 7113
Email nutrsci@okway.okstate.edu
http://www.okstate.edu/hes/nsci/nutsci.html

February 9, 1998

Dear OSU employee:

I am a Master's candidate in the Department of Nutritional Sciences, currently conducting research for my thesis in cooperation with the OSU Wellness Program. Wellness programs in a university setting are established and maintained to assist personnel in participation in exercise programs and practicing other healthy lifestyle behaviors. The mission of the OSU Wellness Center is to provide quality wellness programming to its clientele. The quality of this programming is based on meeting the special needs and interests of its participants. This research is being conducted to evaluate the OSU non-academic employees' personal health habits, current health status, and interest and participation in the Wellness Center Program.

You have been randomly selected as a participant in this survey, therefore your cooperation would be greatly appreciated. Please complete the questionnaire and provide your name and campus address on the colored slip of paper, if you wish to be eligible for incentives. At NO time during the course of this study or during the analysis of the results will your name be associated with your response. I will detach your name and campus address when I receive your completed questionnaire.

As incentives for your participation, the first 50 respondents who filled out the name and address slip of paper will each receive a T-shirt. All participants who return the survey with the incentives paper completed on or before **February 23, 1998,** will be eligible for a drawing of additional prizes. Prizes include gift certificates from Mexico Joe's, lunches at Taylor's Dining Room, fitness memberships to the Wellness Center, and O.S.U. paraphernalia from DuPree's and Chris' University Spirit. Winners of T-shirts and prizes will be contacted by March 23, 1998.

This survey will require about 10 minutes of your time and may provide valuable information for the OSU Wellness Program and your own health. Please complete the attached questionnaire, fold and staple so my return address is showing, and return to us in campus mail **on or before February 23, 1998.** You may contact Gay Clarkson, IRB Executive Secretary, 305 Whitehurst, Oklahoma State University, Stillwater, OK 74078; telephone (405) 744-5700 with further questions concerning participation.

Thank you for your participation and cooperation.

Sincerely,

Erin M. O'Connell
Graduate Student
Ph. (918) 523-8915

Lea L. Ebro, Ph.D., RD
Professor
Major Advisor
Ph. (405) 744-8294

Attachment

Bringing Dreams to Life

An Employer for OSU

PARTICIPATION AND INTEREST OF NON-ACADEMIC PERSONNEL IN A UNIVERSITY WELLNESS PROGRAM

OKLAHOMA STATE UNIVERSITY
College of Human Environmental Sciences
Department of Nutritional Sciences

HEALTH STYLE SURVEY

Part I: Personal Health Habits: Directions: For each of the following questions, mark your answer with an X in the appropriate column.

		Almost Always	Sometimes	Almost Never
	If you never smoke, go to question (4).			
1.	I smoke no more than 1 cigarette per week on a regular basis.			
2.	I smoke only low tar and nicotine cigarettes.			
3.	I avoid smoking in bed.			
4.	I drink no more than 1 or 2 alcoholic beverages (3oz) a day.			
5.	I am careful not to drink alcohol when taking certain medicines (for example, medicines for sleeping, pain, colds, and allergies), or when pregnant.			
6.	I avoid using alcohol or other drugs (especially illegal drugs) as a way of handling stressful situations or the problems of life.			
7.	I read and follow the label directions when using prescribed and over-the-counter drugs.			
8.	I eat a variety of foods each day, such as fruits and vegetables, whole grain breads and cereals, lean meats, dairy products, dry peas and beans, and nuts and seeds.			
9.	I limit the amount of fat, saturated fat, and cholesterol I eat (including fat on meats, eggs, butter, cream, shortenings, and organ meats such as liver).			
10.	I limit the amount of salt I eat by cooking with only small amounts, not adding salt at the table, and avoiding salty snacks.			
11.	I avoid eating too much sugar (especially frequent snacks of sticky candy or soft drinks)			
12.	I maintain a desired weight, avoiding overweight and underweight.			

		Almost Always	Sometimes	Almost Never
13.	I do vigorous exercise for 15-30 minutes at least 3 times a week (examples include running, swimming, brisk walking).	_____	_____	_____
14.	I do exercises that enhance my muscle tone for 15-30 minutes at least 3 times a week (examples: aerobics, yoga, calisthenics).	_____	_____	_____
15.	I use part of my leisure time participating in individual, family, or team activities that increase my level of fitness (such as gardening, bowling, golf, and baseball).	_____	_____	_____
16.	I enjoy my job.	_____	_____	_____
17.	I find it easy to relax and express my feelings freely.	_____	_____	_____
18.	I recognize early, and prepare for, events or situations likely to be stressful for me.	_____	_____	_____
19.	I have close friends, relatives, or others whom I can talk to about personal matters and call on for help when needed.	_____	_____	_____
20.	I participate in group activities (such as church and community organizations).	_____	_____	_____
21.	I wear a seat belt while riding in a car.	_____	_____	_____
22.	I avoid driving while under the influence of alcohol and other drugs.	_____	_____	_____
23.	I obey traffic rules and the speed limit when driving.	_____	_____	_____
24.	I am careful when using potentially harmful products or substances (such as household cleaners, poisons, and electrical devices).	_____	_____	_____

Part II: Current Health Status:

Directions: Please **circle** your answer or **write your answer** in the space provided.

25. What is your employee classification:
    a. Office Clerical
    b. Service Maintenance
    c. Technical Paraprofessional
    d. Trades
    e. Administrative & Professional

26. Please indicate the **number of years of education** you have completed:

8 9 10 11 12	**13 14 15 16**	**17 18 19 20 21+**
High School	College or Vo-tech	Graduate School

27. What is your: age_____ weight_____ height_____ gender_____.

28. How many times **a day** do you eat a meal: 0 1 2 3 4 5 6 7 8 9 10

29. Do you usually snack between meals:
    a. yes b. no

30. On average, how many times a week do you eat breakfast: 0 1 2 3 4 5 6 7

31. Are you **currently** on a special diet:
    a. yes b. no

If yes, which one:
- a. Low calorie or weight loss
- b. Low salt
- c. Diabetic or low sugar
- d. Low fat
- e. High fiber
- f. Ulcer (bland)
- g. Other (please specify)_____

32. How many meals a week do you eat in a restaurant:
- a. 0-5
- b. 6-10
- c. 11-15
- d. 16-20
- e. 21 or more

33. Select the **one** description below that best applies to **your general physical activity during the previous month**. Please indicate with an X in the space provided. **(Choose only one)**

____ a. I do not have a regular exercise program, and I avoid walking or exertion, always using elevators whenever possible instead of walking.
____ b. I do not have a regular exercise program, but I walk for pleasure, routinely use stairs, and occasionally exercise sufficiently to cause heavy breathing or perspiration.
____ c. I perform 10-60 minutes per week of modest physical activity such as golf, horseback riding, calisthenics, table tennis, bowling, weight lifting , or yard work.
____ d. I perform over 1 hour per week of modest physical activity such as golf, horseback riding, calisthenics, table tennis, bowling, weight lifting, or yard work.
____ e. I run less than 1 mile per week or spend less than 30 minutes per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.
____ f. I run 1-5 miles per week or spend 30-60 minutes per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.
____ g. I run 5-10 miles per week or spend 1-3 hours per week in vigorous physical activity such as swimming, cycling, rowing, tennis, basketball, or handball.
____ h. I run over 10 miles per week or spend over 3 hours per week in vigorousphysical activity such as swimming, cycling, rowing, tennis, basketball, orhandball.

34. Do you have any physical problems or limitations that affect your ability to exercise?
    a. yes b. no

35. Do you go to an exercise/fitness center:
    a. yes b. no

If yes, which one:
    a. O.S.U. Wellness Center
    b. O.S.U. Colvin Center
    c. Body Works
    d. Rockhouse
    e. Other (please specify)_ _____

36. In the last 12 months, please estimate the number of times you have utilized the following OSU Wellness Center services:
    a. Back Rehabilitation____
    b. Biometrics™____
    c. Cardiac Rehabilitation____
    d. Cooking Classes____
    e. Employee Assistance Program (EAP)____
    f. Fitness Center____
    g. Health Screening____
    h. Nutrition Counseling____
    i. Personal Training____
    j. Physical Exams____
    k. Physical Therapy____
    l. Treadmill Testing____
    m. Various blood tests____
    n. Wellness Education Classes____
    o. Other (please specify)_____

37. Do you **currently** use tobacco:
    a yes b. no

If yes, circle all that apply:
    a. Cigarettes
    b. Pipe
    c. Cigars
    d. Smokeless

38. Have you **ever** used tobacco products:
    a. yes b. no

If yes, circle all that apply:
    a. Cigarettes
    b. Pipe
    c. Cigars
    d. Smokeless

39. During the past two years did you make a serious attempt to stop tobacco use:
    a. yes b. no c. not applicable

40. Have you ever attended a smoking/tobacco cessation class or program:
    a. yes b. no c. not applicable

41. Have you had a routine physical examination within the past two years:
    a. yes b. no

42 Are you currently being treated for a health problem:
    a. yes b no

43. Do you take any medications on a regular basis:
    a. yes b. no

If yes, circle all that apply:

a. Cholesterol lowering drug
b. Blood Pressure medicine
c. Vitamin/Mineral supplement
d. Aspirin for prevention of heart attack
e. Antacid
f. Pain reliever(Tylenol, Aspirin, Ibuprofen)
g. Prescription weight loss drug
h. Over-the-counter weight loss drug
i. Insulin or drug to lower blood sugar
j. Hormone replacement therapy
k. Antidepressant drug
l. Other (please specify)_____

44. Have you ever been told you have heart disease:
    a. yes b. no

45. Within the last five years, have you had a cardiovascular evaluation:
    a. yes b. no

If so, circle all that apply:

a. Treadmill test
b. Resting EKG
c. Other

46. On average, how many continuous hours of sleep do you get in a 24 hour period:
    a. 6 hours or less b. 7 to 8 hours c. 9 hours or more

Part III: Interest and Participation in the OSU Wellness Center:

47. How interested are you in the OSU Wellness Program:
    a. very interested
    b. interested
    c. somewhat interested
    d. not interested

48. If you are **not** currently participating in any of the OSU Wellness Center programs, please indicate why:

a. Lack of time
b. Inconvenient time
c. Lack of parking
d. Inconvenient location
e. Cost
f. Participate at another facility
g. Unaware of the Wellness Center
h. Uninterested in the programs
i. Other (please specify)_____
_____

49. Which time is most convenient for you to participate in a wellness program:
    a. Early morning (6-7:30am)
    b. Lunch time (11-1pm)
    c. Early evening (5-7pm)
    d. Weekends
    e. Other (please specify)_____

50. Below is a list of wellness programs, circle the programs which you would prefer to attend:
    a. Fitness/exercise
    b. Nutrition awareness
    c. Stress management
    d. Weight management
    e. Safety
    f. Health screening
    g. Tobacco cessation
    h. Alcohol/drug misuse
    i. Time management
    j. Cooking classes
    k. Back rehabilitation
    l. Other (please specify)_____
    _____ _____

51. What incentives would attract you to participate more in the OSU Wellness Center programs:
    a. Free gifts such as t-shirts & water bottles
    b. Contest
    c. Reduced price
    d. Fitness Challenge
    e. Two for one admission specials
    f. Other (please specify)_____

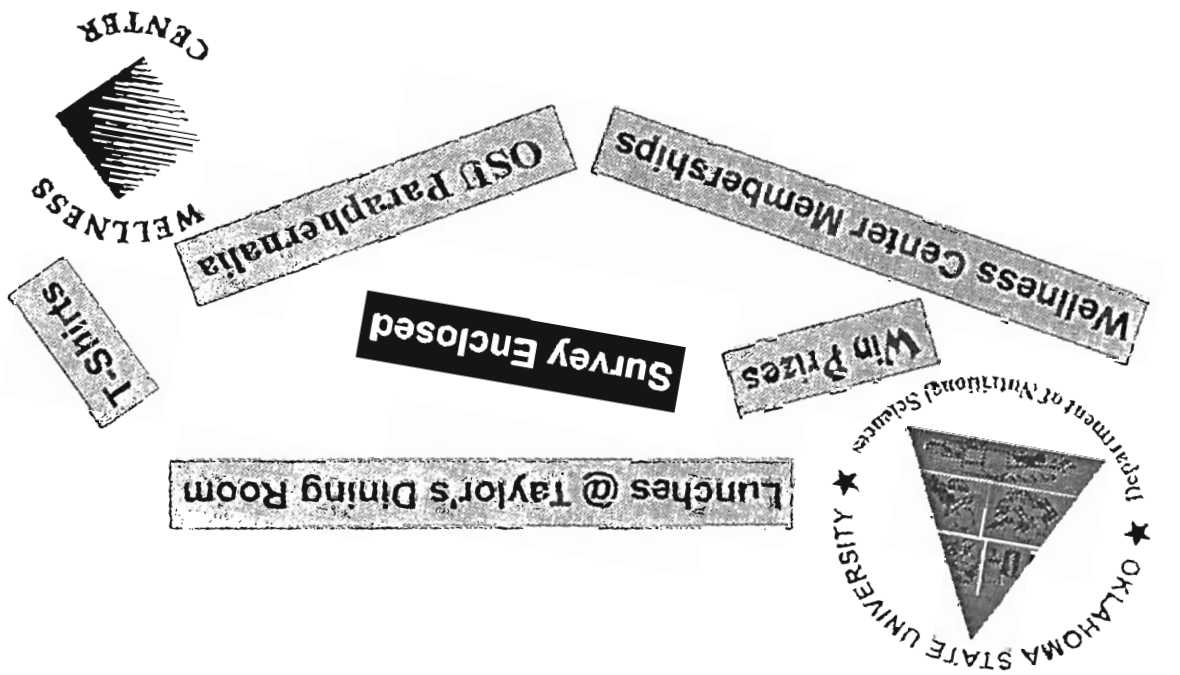
52. If the $55 incentive for health screening with the O.S.U. Wellness Center was **not available**, would you have your health screening (health risk appraisal, blood pressure, cholesterol) performed:
    a. yes, definitely
    b. yes, probably
    c. maybe
    d. probably not
    e. definitely not

53. Please comment on ***Vitality***, the monthly health magazine:
    a. I read ***Vitality*** often and find it very useful.
    b. I read ***Vitality*** occasionally and find it somewhat useful.
    c. I don't read ***Vitality*** enough to have an opinion.
    d. I read ***Vitality*** and find it to be useless information
    e. I believe ***Vitality*** is a waste of money and recommend terminating its circulation.

54. Please provide additional comments about the OSU Wellness Center and/or the promotion of worksite healthy lifestyles:

Erin O'Connell
Nutritional Sciences Dept.
425 HES

CAMPUS MAIL



Erin O'Connell
Nutritional Sciences Dept.
425 HES
CAMPUS

ATTENTION RESEARCH PARTICIPANT

You will **not** be identified with your responses. The researcher will **detach** this slip of paper from the questionnaire with your name and campus address and place it in a **concealed** box as soon as the completed questionnaire is returned. **Name and campus address is needed for incentive purposes only!**

Please **fill in the information** below so that you will be **eligible for the prizes.**

Name_____ **Campus Address**_____

Please re-fold the survey, so my return address is showing and return in campus mail. Thank You!

ATTENTION RESEARCH PARTICIPANT

You will **not** be identified with your responses. The researcher will **detach** this slip of paper from the questionnaire with your name and campus address and place it in a **concealed** box as soon as the completed questionnaire is returned. **Name and campus address is needed for incentive purposes only!**

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Name_____ **Campus Address**_____

Please re-fold the survey, so my return address is showing and return in campus mail. Thank You!

APPENDIX D

INSTITUTIONAL REVIEW BOARD APPROVAL

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: January 22, 1998 **IRB #: HE-98-044**

Proposal Title: PARTICIPATION AND INTEREST OF NON-ACADEMIC PERSONNEL IN A UNIVERSITY WELLNESS PROGRAM

Principal Investigator(s): Lea L. Ebro, Erin M. O'Connell

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Disapproval are as follows:
The reviewer suggests that you communicate the results of this study to Dr. Jim Rodgers, Director of the OSU Wellness Center. This information could prove valuable to the existence of the Center and how they may alter their approach to non-academic personnel.

Signature

Chair of Institutional Review Board

Date: January 23, 1998

Cc: Erin M. O'Connell

APPENDIX E

SCORING SYSTEM OF PART I

UTILIZED BY RESEARCHER

PARTICIPATION AND INTEREST OF NON-ACADEMIC PERSONNEL IN A UNIVERSITY WELLNESS PROGRAM
OKLAHOMA STATE UNIVERSITY
College of Human Environmental Sciences
Department of Nutritional Sciences

HEALTH STYLE SURVEY

Part I: Personal Health Habits: Directions: For each of the following questions, mark your answer with an X in the appropriate column.

		Almost Always	Sometimes	Almost Never
	If you never smoke, go to question (4).			
1.	I smoke no more than 1 cigarette per week on a regular basis.	5	1	0
2.	I smoke only low tar and nicotine cigarettes.	5	1	0
3.	I avoid smoking in bed.	2	1	0
4.	I drink no more than 1 or 2 alcoholic beverages (3oz) a day.	4	1	0
5.	I am careful not to drink alcohol when taking certain medicines (for example, medicines for sleeping, pain, colds, and allergies), or when pregnant.	2	1	0
6.	I avoid using alcohol or other drugs (especially illegal drugs) as a way of handling stressful situations or the problems of life.	2	1	0
7.	I read and follow the label directions when using prescribed and over-the-counter drugs.	2	1	0
8.	I eat a variety of foods each day, such as fruits and vegetables, whole grain breads and cereals, lean meats, dairy products, dry peas and beans, and nuts and seeds.	4	1	0
9.	I limit the amount of fat, saturated fat, and cholesterol I eat (including fat on meats, eggs, butter, cream, shortenings, and organ meats such as liver).	2	1	0
10.	I limit the amount of salt I eat by cooking with only small amounts, not adding salt at the table, and avoiding salty snacks.	2	1	0
11.	I avoid eating too much sugar (especially frequent snacks of sticky candy or soft drinks).	2	1	0
12.	I maintain a desired weight, avoiding overweight and underweight.	3	1	0

		Almost Always	Sometimes	Almost Never
13.	I do vigorous exercise for 15-30 minutes at least 3 times a week (examples include running, swimming, brisk walking).	3	1	0
14.	I do exercises that enhance my muscle tone for 15-30 minutes at least 3 times a week (examples: aerobics, yoga, calisthenics).	2	1	0
15.	I use part of my leisure time participating in individual, family, or team activities that increase my level of fitness (such as gardening, bowling, golf, and baseball).	2	1	0
16.	I enjoy my job.	2	1	0
17.	I find it easy to relax and express my feelings freely.	2	1	0
18.	I recognize early, and prepare for, events or situations likely to be stressful for me.	2	1	0
19.	I have close friends, relatives, or others whom I can talk to about personal matters and call on for help when needed.	2	1	0
20.	I participate in group activities (such as church and community organizations).	2	1	0
21.	I wear a seat belt while riding in a car.	2	1	0
22.	I avoid driving while under the influence of alcohol and other drugs.	2	1	0
23.	I obey traffic rules and the speed limit when driving.	2	1	0
24.	I am careful when using potentially harmful products or substances (such as household cleaners, poisons, and electrical devices).	2	1	0

APPENDIX F

RESULTS FOR PART I: PERSONAL HEALTH HABIT PERCENTAGES BY INDIVIDUAL QUESTIONS

		Almost Always %	Sometimes %	Almost Never %
	If you never smoke, go to question (4).			
1.	I smoke no more than 1 cigarette per week on a regular basis.	6.3	1.6	92.1
2.	I smoke only low tar and nicotine cigarettes.	45.2	8.1	46.8
3.	I avoid smoking in bed.	59.4	10.9	29.7
4.	I drink no more than 1 or 2 alcoholic beverages (3oz) a day.	52.6	7.5	39.9
5.	I am careful not to drink alcohol when taking certain medicines (for example, medicines for sleeping, pain, colds, and allergies), or when pregnant.	88.1	1.5	10.4
6.	I avoid using alcohol or other drugs (especially illegal drugs) as a way of handling stressful situations or the problems of life.	86.0	5.1	8.8
7.	I read and follow the label directions when using prescribed and over-the-counter drugs.	92.6	4.8	2.6
8.	I eat a variety of foods each day, such as fruits and vegetables, whole grain breads and cereals, lean meats, dairy products, dry peas and beans, and nuts and seeds.	52.4	43.7	3.9
9.	I limit the amount of fat, saturated fat, and cholesterol I eat (including fat on meats, eggs, butter, cream, shortenings, and organ meats such as liver).	43.1	47.3	9.6
10.	I limit the amount of salt I eat by cooking with only small amounts, not adding salt at the table, and avoiding salty snacks.	45.0	36.6	18.4
11.	I avoid eating too much sugar (especially frequent snacks of sticky candy or soft drinks).	37.6	49.8	12.5
12.	I maintain a desired weight, avoiding overweight and underweight.	33.1	42.4	24.4

		Almost Always	Sometimes	Almost Never
13.	I do vigorous exercise for 15-30 minutes at least 3 times a week (examples include running, swimming, brisk walking).	32.3	40.6	27.1
14.	I do exercises that enhance my muscle tone for 15-30 minutes at least 3 times a week (examples: aerobics, yoga, calisthenics).	21.0	30.1	48.9
15.	I use part of my leisure time participating in individual, family, or team activities that increase my level of fitness (such as gardening, bowling, golf, and baseball).	27.8	48.5	23.6
16.	I enjoy my job.	65.2	30.3	4.5
17.	I find it easy to relax and express my feelings freely.	46.9	45.3	7.8
18.	I recognize early, and prepare for, events or situations likely to be stressful for me.	44.8	51.3	3.9
19.	I have close friends, relatives, or others whom I can talk to about personal matters and call on for help when needed.	70.6	24.5	4.8
20.	I participate in group activities (such as church and community organizations).	43.9	37.7	18.4
21.	I wear a seat belt while riding in a car.	82.9	11.3	5.8
22.	I avoid driving while under the influence of alcohol and other drugs.	95.5	2.6	1.6
23.	I obey traffic rules and the speed limit when driving.	78.4	20	1.6
24.	I am careful when using potentially harmful products or substances (such as household cleaners, poisons, and electrical devices).	91.9	7.4	0.6

APPENDIX G

HYPOTHESES TESTING

Hypotheses

The following objectives were established for hypotheses testing: to identify personal health habits and current health status of the non-academic employees at Oklahoma State University, and to relate these with demographic variables; and to relate personal health habit scores with variables: eating habits, exercise/fitness, tobacco use, and current health status. From these objectives this study postulated the following hypotheses:

H01: There will be no significant associations between the personal health habit scores and demographic variables: employee classification, number of years of education, age, gender, and Body Mass Index (BMI).

H02: There will be no significant associations between eating habit scores and the number of meals consumed per day, snacking between meals, breakfast habits, being on a special diet, and the number of meals per week eaten in a restaurant.

H03: There will be no significant associations between the exercise/fitness scores and general physical activity during the previous month, the presence of any physical problems or limitations that affect the ability to exercise, and belonging to an exercise/fitness center.

H04: There will be no significant associations between the cigarette smoking scores and being a current or previous smoker, making a serious attempt to stop tobacco use, and attending a smoking/tobacco cessation class or program.

H05: There will be no significant associations between the personal health habit scores and the current health status variables: physical examination during past two years, current treatment of health problem, being on medication, presence of heart disease, having a cardiovascular evaluation, and number of continuous hours of sleep in a 24 hour period.

H06: There will be no significant associations between interest in the OSU Wellness Program and the demographic variables: employee classification, number of years of education, age, gender, and BMI.

H07: There will be no significant associations between reasons for not currently participating in any OSU Wellness Center Program and the demographic variables: employee classification, number of years of education, gender, and BMI.

H08: There will be no significant associations between most convenient time to participate in a wellness program with the demographic variables: employee classification, age, and gender.

Testing of Hypotheses

H01: Hypothesis one stated the personal health habit scores in the six categories of cigarette smoking, alcohol and drugs; eating habits; exercise/fitness; stress control and safety were not significantly associated with demographic variables of employee

classification, number of years of education, age, gender, and BMI. Significant associations were found in nine of the 30 total analyses performed. The most significant category was smoking habits. The variables significantly associated with smoking habits were employee classification, number of years of education, and age. Based on results presented in Table 10 and Appendices H & I, the researcher rejected H01 in part due to the nine analyses that were found to be significant out of the 30 analyses performed.

The reader is reminded that higher awareness scores for the personal health habits are associated with better health habits. See Appendix E for the scoring system and the data analysis section for further explanation. The less than high school education group had significantly ($p=0.0424$) lower smoking habit scores than all other education groups. The graduate education group had significantly ($p=0.0001$) higher exercise habit scores than the some college education group. Graduate education group tended to have higher exercise scores than all other education groups.

Level of education has been found to be one of the strongest predictors of health promotion behavior (Zhu, Giovino, Mowery, and Eriksen, 1996). Research has shown that the lower the education level of a person the more likely they are to have poor health habits (Huddy *et al.*, 1996). The non-academic employees results' correspond with this statement. Huddy *et al.* also reported that university employee incidence of cigarette smoking to be lower than the U.S. population. This was explained by the well-known relationship between smoking and education level, as education level increases the frequency of smokers decreases. The non-academic employees smoking incidence was also lower than the U.S. population (U.S. Department of Health and Human Services, 1993). Zhu, Giovino, Mowery, and Eriksen (1996) reported that the people who have

been found to be most likely to be current, ever, and heavy smokers and the least likely to quit have between 9 and 11 years of education. After 11 years of education the likelihood of smoking decreases and smoking cessation increases with each year of education.

The alcohol consumption patterns of the university employees showed more abstainers and fewer consumers in all categories (Huddy *et al.*, 1996). The same was true with the non-academic employees. However, French, Zarkin, Hartwell, and Bray (1995) found better educated people and white males as the most likely to have consumed alcohol daily in the past year.

Physical inactivity is more common among Americans who are considered uneducated. The Center for Disease Control and Prevention (1995) has also cited that higher levels of education are associated with increased leisure time activities compared to people with less education. Again this supports the evidence that better educated individuals are making changes to follow the national health recommendations.

Age group four (45-54 years of age) had significantly lower ($p=0.0048$) smoking habit scores than age groups one (less than 25 years of age), two (25-34 years of age), and three (35-44 years of age). Age group four also tended to have lower smoking habit scores than group five (55-64 years of age). In regards to eating habit scores and age group, group five had significantly ($p=0.0015$) higher eating habit scores than all other age groups. Age groups one and two, which corresponds with the ages less than 25 to 34 years of age, had better smoking habits than the older age groups, but their eating habits were worse than the older age groups. As age increases, physical activity in general has been shown to decrease (CDC, 1995). However, the oldest group of non-academic employees did not show a significant association with poor exercise habits.

Employees classified as service maintenance and trades had significantly ($p=0.0031$) lower smoking habit scores than office clerical, technical paraprofessional, and administrative and professional. Office clerical employees had significantly ($p=0.0057$) higher safety habit scores than trades employees. The office clerical classification tended to have higher safety habit scores than all other classifications. Although not significant at $p\leq.05$, the office clerical and administrative and professional employees had higher (at $p=0.0522$ significance level) abuse habit scores than trades employees. Stress habit scores were also related to employee classification. Office clerical classification had significantly higher ($p=0.0100$) stress habit scores than technical paraprofessional employees.

The employee classifications of service maintenance and trades are considered the blue-collar positions for this discussion. The non-academic, blue-collar employees were the most likely to have lower personal health habit scores (unfavorable habits) compared to the other classifications. Blue-collar workers are less likely to engage in leisure time physical activity compared to white-collar workers (Gottlieb *et al.*, 1992). This was not found to be a significant association in the non-academic population. The relationship between smoking and occupation is complex, however, prevalence of cigarette smoking remains higher among blue-collar workers, service workers, and military personnel compared to white collar workers. Unfavorable smoking habits in this study were found to be associated with the non-academic, blue-collar employees. There has also been a decrease in the incidence of smoking among leaders in the worksite namely, managers, administrative and professional, and technical workers, which may lead to encouragement for other employees to quit (Nelson *et al.*, 1994). There are no baseline data to measure a decrease in the incidence of smoking as it relates to employee classification, however, the

office clerical, technical paraprofessional, and administrative and professional classifications had more favorable smoking habits compared to the service maintenance and trades classifications.

BMI was found to be associated with exercise habit scores. Non-academic employees classified as underweight had significantly ($p=0.0001$) higher exercise habit scores than the BMI classifications of overweight, morbidly overweight, and severely overweight. Acceptable BMI classification employees also had significantly ($p=0.0001$) higher exercise habit scores than morbidly overweight and severely overweight. The Center for Disease Control and Prevention (1995) reported that there appears to be an inverse relationship between physical activity and obesity in the U.S. This report corresponds with the association between the non-academic personnel's BMI classifications and exercise habits.

Gender was found to be associated with safety, eating, and stress habit scores. Women had significantly ($p=0.0170$) higher safety habit scores and significantly ($p=0.0183$) higher eating habit scores than men. The reader is reminded that higher scores correspond with better health habits. Women also tended to have ($p=0.534$) higher stress habit scores than men.

Mirand and Welte (1996), found heavy drinking positively related to being male. Men have also been found to be more likely to engage in regular physical activity, vigorous exercise, and sports compared to women (Center for Disease Control, 1995). However, Spilman's (1984) study found greater participation in women compared to men. Verhoef *et al.* (1993) discovered that only 27% of women with exercise programs or

facilities available to them at work used the programs. This study did not find significant associations between gender and exercise or alcohol abuse.

According to the correlation analyses (Appendix J), a significant (p=0.0056) negative correlation (r=-0.15719) was found between age and smoking habit scores. As age of the non-academic employees increased smoking habit scores decreased. The reader is reminded that higher personal health habit scores correspond with better health habits. A significant (p=0.0015) positive (r=0.18004) correlation was discovered between age and eating habit scores. As age of the non-academic employees increased eating habit scores also increased. A significant (p=0.0001) negative (r=-0.43609) correlation was found between BMI values and exercise habit scores. As BMI values decreased exercise habit scores increased. A significant (p=0.0001) positive (r=0.24424) correlation was found between number of years of education and exercise habit scores. As number of years of education increased the exercise habit scores also increased.

H02: Hypothesis two stated that the number of meals consumed per day, snacking between meals, breakfast habits, being on a special diet, and the number of meals per week eaten in a restaurant were not significantly associated with eating habit scores. Significant associations were found in five of the five analyses performed. The most significant categories were number of meals consumed per day, breakfast habits, and being on a special diet. All variables were significantly associated with eating habit scores. Based on results presented in Table 11 and Appendices H & I, the researcher rejected H02.

Although the ANOVA analyses showed a significant (p=0.0001) association with number of meals eaten per day and eating habit scores, the Duncan's Multiple Range Test showed no significant differences by Duncan Grouping, however, the non-academic

employees who ate five meals per day tended to have higher eating habit scores than all others. The people who reported eating only one or two meals per day tended to have the lowest eating habit scores.

The non-academic employees who ate breakfast seven times per week had significantly ($p=0.0001$) higher eating habit scores than the people who ate breakfast zero, one, two, and four times per week. Those who ate breakfast zero to four times per week tended to have lower eating habit scores than those who ate breakfast seven times per week. Those who ate breakfast almost every day of the week (5-7 days) tended to have higher eating habit scores.

The non-academic employees that reported eating in a restaurant zero to five times per week had significantly ($p=0.0173$) higher eating habit scores compared to eating in a restaurant six to fifteen times per week. The respondents that reported snacking between meals had significantly ($p=0.002$) lower eating habit scores, and those who reported being on a special diet had significantly ($p=0.0001$) higher eating habit scores.

H03: H03 stated that there would be no significant associations between general physical activity during the previous month, the presence of any physical problems or limitations that affect the ability to exercise, and belonging to an exercise/fitness center and the exercise/fitness scores. Significant associations were found in two of the three total analyses performed. Therefore based on the results presented in Table 12 and Appendices H & I, the researcher rejected hypothesis three.

Exercise habit scores were found to be significantly ($p=0.0001$) associated with general physical activity during the previous month. Duncan's Multiple Range Tests found that subjects with general physical activity level eight (see Table 3) had significantly

higher exercise scores than all other general activity levels. Level seven of general activity during the previous month was significantly associated with higher exercise habit scores than levels one, two, three, four, and five. Level six of general activity was significantly associated with higher exercise habit scores than levels one, two, three, and five. Levels four and five of general activity were significantly associated with higher exercise habit scores than levels one and two. Levels two and three of general activity were significantly associated with higher exercise habit scores than level one. Respondents that participate in an exercise/fitness center had significantly ($p=0.0001$) higher exercise habit scores compared to respondents who did not participate.

H04: Based on the results presented in Table 13 and Appendices H & I, the researcher rejected H04 due to all four analyses being significant. H04 stated that being a current smoker, being a smoker in the past, making a serious attempt to stop tobacco use, and attending a smoking/tobacco cessation class or program was not significantly associated with the cigarette smoking scores. Significant scores were found in four of the four total analyses performed with the significance found among current and previous tobacco users, specifically cigarettes and smokeless tobacco use, and for a serious attempt to stop tobacco use and attendance of a smoking/tobacco cessation class.

Current and previous tobacco users had significantly ($p=0.0001$) lower smoking habit scores than non-users. Non-academic employees that reported a serious attempt to stop tobacco use in the past two years had significantly ($p=0.0001$) lower smoking habit scores than respondent that answered no and not applicable. Respondents who have not attended a smoking/tobacco cessation class or program had significantly ($p=0.0001$) lower smoking habit scores than respondents that answered not applicable and tended to have

lower smoking habit scores than respondents who have attended a smoking/tobacco cessation class or program.

H05: According to Table 14 and Appendices H & I, the researcher rejected H05 due to the significant findings. H05 stated that there were no significant associations between the personal health habit scores in the categories of cigarette smoking; alcohol and drug abuse; eating habits; exercise/fitness; stress control; and safety with the current health status scores: physical examination during the past two years, current treatment of health problem, being on medication, presence of heart disease, having a cardiovascular evaluation, and number of continuous hours of sleep in a 24 hour period. Significant associations were found in 10 of 30 total analyses performed. The most significant category was eating habits when compared with having a cardiovascular evaluation and number of continuous hours of sleep in a 24 hour period.

Respondents that had a physical examination within the past two years had significantly ($p=0.0111$) lower smoking habit scores, significantly (p 0.0271) lower safety habit scores, and significantly ($p=0.0028$) lower stress habit scores. Although not significant at the .05 level non-academic employees who are currently being treated for a health problem tended to have lower smoking, safety, and stress habit scores. Non-academic employees who are currently being treated for a health problem had significantly ($p=0.0416$) lower abuse scores and significantly ($p=0.0001$) lower exercise scores. Currently taking medication on a regular basis was found to be significantly ($p=0.0071$) associated with lower exercise scores. Although not significant at the .05 level, respondents currently taking medications on a regular basis tended to have lower stress scores. Non-academic employees who had a cardiovascular evaluation within the last

five years had significantly (p=0.0015) higher eating habit scores. Sleeping nine or more continuous hours in a 24 hour period in this population was significantly (p=0.0210) associated with higher eating habit scores than people who reported sleeping six or less hours. Sleep nine or more hours was also significantly (p=0.0474) associated with higher stress habit scores than people who slept seven to eight hours and six or less hours. Although not significant at the .05 level, respondents with nine or more hours of sleep tended to have higher abuse habit scores than people who slept seven to eight hours or six or less hours.

H06: Based on the results presented in Appendix K, the researcher rejected hypothesis six. H06 stated that there were no significant associations between interest in the OSU Wellness Program and the demographic variables: employee classification, number of years of education, age, gender, and BMI. A significant association was found in one of the five total analyses performed. The significant association was interest in the OSU Wellness Program and gender.

According to the chi-square analysis, males were significantly less likely to be interested in the OSU Wellness Center than females. Females tended to be very interested or interested in the OSU Wellness Center and males tended to be somewhat interested and not interested in the OSU Wellness Center.

H07: Based on Appendix K, the researcher rejected H07 in part, and failed to reject H07 based on 15 associations which were not significant. Hypothesis seven stated that there were no significant associations between reasons for not participating in OSU Wellness Center programs (lack of time, inconvenient time, cost, and unaware of the Wellness Center) and the demographic variables: employee classification, number of years

of education, gender, and BMI. A significant association was found in one of the 16 total analyses performed (Appendix K). The significant association was lack of time compared to education group.

With regards to gender and inconvenient time as a barrier to participation although not significant at the .05 level more females tended to report inconvenient time as a barrier to participation than males. Although not significant at the .05 level non-academic employees who had BMI codes of severely overweight tended to not report cost as a barrier to participation in the OSU Wellness Center. Education group was significantly ($p=0.032$) related to lack of time as a barrier to participation in the OSU Wellness Center. Graduate education group employees tended to report lack of time as not being barrier to participation.

H08: Based on the results presented in Appendix K, the researcher rejected H08. Hypothesis eight which stated that there were no significant associations between most convenient time to participate in a wellness program and the demographic variables: employee classification, age, and gender. Significant associations were found in four of the 12 analyses performed (Appendix K). The significant associations were found with lunch time compared to gender, early evening compared to gender, lunch time compared to age, and early evening compared to age.

Gender and lunch time as a convenient participation time in the OSU Wellness Center were significantly associated ($p=0.050$). Significantly more females reported an interest in participating at lunch time. Significantly ($p=0.051$) more females also reported an interest in participating in the early evening than males. In general most people did not prefer to participate at lunch, however, age groups three and five significantly ($p=0.035$)

tended to prefer to exercise at lunch. Younger age groups significantly (p=0.016) tended to prefer early evening whereas the older age groups of three and five did not prefer early evenings. Of the respondents that preferred weekends for participation age groups one, two, and three tended to prefer weekends more than the older age groups.

Table 10. P Values for ANOVA and T-test Analyses of Personal Health Habit Scores by Demographics (Hypothesis One)

Categories	ANOVA Employee Classification	ANOVA Education	ANOVA Age	ANOVA BMI	T-test Gender
Smoking	0.0031	0.0424	0.0048	0.3060	0.0147
Alcohol/Drug	0.0522	0.9647	0.7498	0.9410	0.8698
Eating	0.3136	0.8658	0.0015	0.7178	0.1221
Exercise	0.1806	0.0001	0.1709	0.0001	0.4602
Stress	0.0100	0.3197	0.5863	0.8554	0.7839
Safety	0.0057	0.5734	0.6324	0.7436	0.0771

Table 11. P Values for ANOVA and T-test Analyses of Eating Habit Questions (28-32) by Eating Habit Scores. (Hypothesis Two)

Eating Habit Questions	**Eating Habit Scores**
Number of meals consumed per day	**ANOVA**
	0.001
Snacking between meals	**T-test**
	0.0002
Breakfast habits	**ANOVA**
	0.0001
Being on a special diet	**T-test**
	0.0001
Low calorie diet	**T-test**
	0.0065
Low salt diet	**T-test**
	0.0056
Diabetic or low sugar diet	**T-test**
	0.0021
Low fat diet	**T-test**
	0.0001
High fiber diet	**T-test**
	0.0040
Number of meals in a restaurant per week	**T-test**
	0.0173

Table 12. P Values for ANOVA and T-test Analyses of Exercise Questions (33-35) by Exercise Habits Scores. (Hypothesis Three)

Exercise Questions	**Exercise Habit Scores**
General physical activity during the previous month	**ANOVA** 0.0001
Presence of physical problems or limitations	**T-test** 0.0997
Belonging to an exercise/fitness center	**T-test** 0.0001
OSU Wellness Center	**T-test** 0.0008
OSU Colvin Center	**T-test** 0.0001
Body Works	**T-test** 0.0318
Rockhouse	**T-test** 0.0569

Table 13. P Values for ANOVA and T-test Analyses of Smoking Questions (37-40) by Smoking Habits Scores. (Hypothesis Four)

Smoking Questions	**Smoking Habit Scores**
	T-test
Current tobacco user	0.0001
Cigarette use	0.0001
Pipe use	No data
Cigar use	0.4165
Smokeless tobacco use	0.1091
Previous tobacco use	0.0001
Cigarette use	0.0001
Pipe use	0.1844
Cigar use	0.1375
Smokeless tobacco use	0.0954
	ANOVA
Serious attempt to stop tobacco use	0.0001
Attendance of a smoking/tobacco cessation class or program	0.0001

Table 14. P Values for ANOVA and T-test Analyses of Personal Health Habit Scores by Current Health Status Questions (41-46). (Hypothesis Five)

Categories	T-test Physical Exam	T-test Current Health Problem	T-test Current Medication Use	T-test CVD Evaluation	ANOVA Sleep
Smoking	0.0111	0.0329	0.1620	0.1203	0.5824
Alcohol/ Drug	0.4943	0.0416	0.2022	0.9420	0.0959
Eating	0.0986	0.3586	0.9827	0.0015	0.0210
Exercise	0.8597	0.0001	0.0071	0.8949	0.2601
Stress	0.0028	0.0616	0.0617	0.3224	0.0474
Safety	0.0271	0.0645	0.2586	0.2635	0.2733

Table 15. P Values for T-test Analyses of Personal Health Habit Scores by Current Medication Use

Categories	T-test Blood Pressure	T-test Aspirin	T-test Anti-depressant	T-test Insulin	T-test Hormone Replacement
Smoking	0.1573	0.4803	0.3781	0.0157	0.6256
Alcohol/ Drug	0.0359	0.7890	0.4573	0.6748	0.7420
Eating	0.0905	0.00041	0.2929	0.0314	0.0333
Exercise	0.0028	0.4490	0.6933	0.0006	0.9252
Stress	0.4512	0.4308	0.0153	0.8467	0.6260
Safety	0.2104	0.6069	0.0384	0.4503	0.1987

Table 16. P Values for T-test Analyses of Personal Health Habit Scores by Cardiovascular Disease Evaluations

Categories	T-test Treadmill	T-test EKG
Smoking	0.0980	0.2970
Alcohol/ Drug	0.7036	0.9040
Eating	0.0015	0.0075
Exercise	0.3869	0.8396
Stress	0.6499	0.8578
Safety	0.9473	0.6002

Summary of Hypotheses Testing

Hypothesis one stated the personal health habit scores in the six categories of cigarette smoking, alcohol and drugs; eating habits; exercise/fitness; stress control and safety were not significantly associated with demographic variables of employee classification, number of years of education, age, gender, and BMI. The variables significantly associated with smoking habits were employee classification, number of years of education, and age. As a result of these significant associations, the researcher rejected H01 in part due to the nine analyses that were found to be significant out of the 30 analyses performed (Table 10) (Appendix H & I). As the number of years of education for the non-academic employees increased the smoking habit scores and the exercise habit scores increased. As age of the respondents increased the personal health habit scores for

smoking decreased and personal health habit scores for eating habits increased. Office clerical personnel had better safety, smoking, abuse, and stress habits. Underweight and acceptable weight employees had better exercise habits. Women had better safety, eating, and stress habits.

Hypothesis two stated that the number of meals consumed per day, snacking between meals, breakfast habits, being on a special diet, and the number of meals per week eaten in a restaurant were not significantly associated with eating habit scores. The most significant categories were number of meals consumed per day, breakfast habits, being on a special diet, and a low fat diet Based on the significant associations, the researcher rejected H02 (Table 11) (Appendix H & I). Employees who ate five meals per day, ate breakfast seven times per week, ate in a restaurant zero to five times per week, did not snack during the day, and were on a special diet had better eating habits.

H03 stated that there would be no significant associations between general physical activity during the previous month, the presence of any physical problems or limitations that affect the ability to exercise, and belonging to an exercise/fitness center and the exercise/fitness scores. Based on the results in Table 12 and Appendices H & I, the researcher rejected H03. Higher general activity levels and participation in an exercise/fitness center were associated with better exercise habits.

H04 stated that being a current smoker, being a smoker in the past, making a serious attempt to stop tobacco use, and attending a smoking/tobacco cessation class or program was not significantly associated with the cigarette smoking scores. As a result of the significant associations, the researcher rejected H04 (Table 13) (Appendix H & I). Current and previous tobacco users, employees who had made a serious attempt to stop

tobacco use, and employees who had not attended a smoking/tobacco cessation class or program had worse smoking habits.

H05 stated that there were no significant associations between the personal health habit scores in the categories of cigarette smoking; alcohol and drug abuse; eating habits; exercise/fitness; stress control; and safety with the current health status scores: physical examination during the past two years, current treatment of health problem, being on medication, presence of heart disease, having a cardiovascular evaluation, and number of continuous hours of sleep in a 24 hour period. evaluation. The researcher rejected H05 due to the significant findings (Table 14) (Appendix H & I). Physical examinations in the past two years were associated with worse smoking, safety, and stress habits. Currently being treated for a health problem was associated with worse abuse and exercise habits. Cardiovascular evaluations and sleeping nine or more hours per night were associated with better eating habits.

Hypothesis six stated that there were no significant associations between interest in the OSU Wellness Program and the demographic variables: employee classification, number of years of education, age, gender, and BMI. Based on the results in Appendix K, H06 was rejected. Females in the study tended to more interested in the OSU Wellness Center.

Hypothesis seven stated that there were no significant associations between reasons for not participating in OSU Wellness Center programs and the demographic variables: employee classification, number of years of education, gender, and BMI. As a result of the significant associations, the researcher rejected H07 in part, and failed to reject H07 based on 15 associations which were not significant (Appendix K). The non-

academic employees who had graduate education tended to report lack of time as not being a barrier to participate.

Hypothesis eight stated that there were no significant associations between most convenient time to participate in a wellness program and the demographic variables: employee classification, age, and gender. The researcher rejected H08 due to the significant findings (Appendix K). Females tended to be more interested in participating at lunch time and early evenings compared to men. Younger age groups tended to prefer early evening and weekends.

APPENDIX H

ANOVA TABLES AND

DUNCAN'S MULTIPLE RANGE TESTS

Hypothesis I analyses

Analysis of Variance Procedure

Dependent Variable: SMOKE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	85.56892265	28.52297422	2.76	0.0424
Error	304	3141.40185657	10.33355874		
Corrected Total	307	3226.97077922			

R-Square	C.V.	Root MSE	SMOKE Mean
0.026517	37.77536	3.214585	8.50974026

Source	DF	Anova SS	Mean Square	F Value	Pr > F
EDUCGP	3	85.56892265	28.52297422	2.76	0.0424

Hypothesis I analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: SMOKE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha = 0.05 df= 304 MSE= 10.33356
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 25.0348

Number of Means	2	3	4
Critical Range	1.805	1.898	1.958

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	EDUCGP
A	8.935	92	Bachelors
A			
A	8.552	58	Graduate
A			
A	8.387	150	Some college
B	5.625	8	<High school

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: EXERCISE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	168.8429709	56.2809903	7.78	0.0001
Error	304	2197.8323538	7.2297117		
Corrected Total	307	2366.6753247			

R-Square	C.V.	Root MSE	EXERCISE Mean
0.071342	59.32337	2.688812	4.53246753

Source	DF	Anova SS	Mean Square	F Value	Pr > F
EDUCGP	3	168.8429709	56.2809903	7.78	0.0001

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EXERCISE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 304 MSE= 7.229712
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes 25.0348

Number of Means 2 3 4
Critical Range 1.510 1.588 1.638

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	EDUCGP
A	5.897	58	Graduate
A			
B A	5.250	8	<High school
B A			
B A	4.609	92	Bachelor's
B			
B	3.920	150	Some college

Hypothesis 1 Analyses

Analysis of Variance Procedure

Dependent Variable: SMOKE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	154.3908286	38.5977072	3.82	0.0048
Error	304	3074.7936374	10.1144528		
Corrected Total	308	3229.1844660			

R-Square	C.V.	Root MSE	SMOKE Mean
0.047811	37.35157	3.180323	8.51456311

Source	DF	Anova SS	Mean Square	F Value	Pr > F
AGEGP	4	154.3908286	38.5977072	3.82	0.0048

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: SMOKE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 304 MSE= 10.11445
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 40.49292

Number of Means	2	3	4	5
Critical Range	1.404	1.476	1.523	1.558

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	AGEGP
	A	9.125	16	1
	A			
	A	9.010	96	3
	A			
	A	9.000	83	2
	A			
B	A	8.250	40	5
B				
B		7.338	74	4

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: EATING

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	109.5741678	27.3935419	4.51	0.0015
Error	304	1847.2672562	6.0765370		
Corrected Total	308	1956.8414239			

R-Square	C.V.	Root MSE	EATING Mean
0.055995	38.78333	2.465063	6.35598706

Source	DF	Anova SS	Mean Square	F Value	Pr > F
AGEGP	4	109.5741678	27.3935419	4.51	0.0015

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EATING

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 304 MSE 6.076537
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 40.49292

Number of Means 2 3 4 5
Critical Range 1.088 1.144 1.181 1.208

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	AGEGP
A	7.800	40	5
B	6.473	74	4
B			
B	6.145	83	2
B			
B	6.000	16	1
B			
B	5.906	96	3

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: SMOKE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	163.3924137	40.8481034	4.07	0.0031
Error	297	2980.0546062	10.0338539		
Corrected Total	301	3143.4470199			

R-Square	C.V.	Root MSE	SMOKE Mean
0.051979	37.20821	3.167626	8.51324503

Source	DF	Anova SS	Mean Square	F Value	Pr > F
CLASSIF	4	163.3924137	40.8481034	4.07	0.0031

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: SMOKE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 297 MSE= 10.03385
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 44.65211

Number of Means	2	3	4	5
Critical Range	1.332	1.400	1.445	1.478

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	CLASSIF
A	9.029	103	1
A			
A	8.768	56	3
A			
A	8.713	87	5
B	7.125	24	2
B			
B	6.906	32	4

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: SAFETY

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	18.09672192	4.52418048	3.72	0.0057
Error	297	361.13837741	1.21595413		
Corrected Total	301	379.23509934			

R-Square	C.V.	Root MSE	SAFETY Mean
0.047719	11.94892	1.102703	9.22847682

Source	DF	Anova SS	Mean Square	F Value	Pr > F
CLASSIF	4	18.09672192	4.52418048	3.72	0.0057

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: SAFETY

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 297 MSE 1.215954
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 44.65211

Number of Means 2 3 4 5
Critical Range 0.464 0.488 0.503 0.514

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	CLASSIF
	A	9.505	103	1
	A			
B	A	9.184	87	5
B	A			
B	A	9.167	24	2
B	A			
B	A	9.125	56	3
B				
B		8.688	32	4

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: ABUSE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	66.48064323	16.62016081	2.38	0.0522
Error	297	2077.77432366	6.99587314		
Corrected Total	301	2144.25496689			

R-Square	C.V.	Root MSE	ABUSE Mean
0.031004	32.85814	2.644971	8.04966887

Source	DF	Anova SS	Mean Square	F Value	Pr > F
CLASSIF	4	66.48064323	16.62016081	2.38	0.0522

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: ABUSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 297 MSE= 6.995873
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 44.65211

Number of Means	2	3	4	5
Critical Range	1.112	1.169	1.206	1.234

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	CLASSIF
	A	8.417	103	1
	A			
	A	8.195	87	5
	A			
B	A	7.946	56	3
B	A			
B	A	7.833	24	2
B				
B		6.812	32	4

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: STRESS

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	50.05265708	12.51316427	3.38	0.0100
Error	297	1099.52681311	3.70211048		
Corrected Total	301	1149.57947020			

R-Square	C.V.	Root MSE	STRESS Mean
0.043540	26.35257	1.924087	7.30132450

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
CLASSIF	4	50.05265708	12.51316427	3.38	0.0100

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: STRESS

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 297 MSE= 3.70211
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 44.65211

Number of Means	2	3	4	5
Critical Range	0.809	0.851	0.877	0.898

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	CLASSIF
	A	7.718	103	1
	A			
B	A	7.402	87	5
B	A			
B	A	7.156	32	4
B	A			
B	A	7.000	24	2
B				
B		6.589	56	3

Hypothesis 1 analyses

Analysis of Variance Procedure

Dependent Variable: EXERCISE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	455.3007600	113.8251900	17.93	0.0001
Error	302	1916.6666667	6.3465784		
Corrected Total	306	2371.9674267			

R-Square	C.V.	Root MSE	EXERCISE Mean
0.191951	55.36200	2.519242	4.55048860

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BMICODE	4	455.3007600	113.8251900	17.93	0.0001

Hypothesis 1 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EXERCISE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha 0.05 df= 302 MSE= 6.346578
WARNING. Cell sizes are not equal.
Harmonic Mean of cell sizes= 12.42879

Number of Means	2	3	4	5
Critical Range	2.008	2.111	2.178	2.228

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	BMICODE
	A	7.111	9	under
	A			
B	A	5.361	180	acceptable
B				
B	C	3.625	64	over
	C			
	C	2.750	4	morbid
	C			
	C	2.500	50	severe over

Hypothesis 2 analyses

Analysis of Variance Procedure

Dependent Variable: EATING

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	6	247.7711292	41.2951882	7.29	0.0001
Error	303	1716.0385482	5.6634936		
Corrected Total	309	1963.8096774			

R-Square	C.V.	Root MSE	EATING Mean
0.126169	37.39184	2.379810	6.36451613

Source	DF	Anova SS	Mean Square	F Value	Pr > F
MEALS	6	247.7711292	41.2951882	7.29	0.0001

Hypothesis 2 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EATING

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 303 MSE 5.663494
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 2.899399

Number of Means	2	3	4	5	6	7
Critical Range	3.926	4.129	4.259	4.357	4.439	4.507

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	MEALS
A	8.250	4	5
A			
A	6.978	181	3
A			
A	6.923	13	4
A			
A	6.000	1	6
A			
A	6.000	1	7
A			
A	5.385	96	2
A			
A	4.143	14	1

Hypothesis 2 analyses

Analysis of Variance Procedure

Dependent Variable: EATING

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	262.9250446	37.5607207	6.67	0.0001
Error	302	1700.8846328	5.6320683		
Corrected Total	309	1963.8096774			

R-Square	C.V.	Root MSE	EATING Mean
0.133885	37.28795	2.373198	6.36451613

Source	DF	Anova SS	Mean Square	F Value	Pr > F
BFST	7	262.9250446	37.5607207	6.67	0.0001

Hypothesis 2 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EATING

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 302 MSE= 5.632068
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 28.95301

Number of Means	2	3	4	5	6	7	8
Critical Range	1.239	1.303	1.344	1.375	1.401	1.422	1.440

Means with the same letter are not significantly different.

Duncan Grouping			Mean	N	BFST
	A		7.202	119	7
	A				
B	A		6.973	37	5
B	A				
B	A		6.762	21	6
B	A				
B	A	C	5.963	27	3
B		C			
B		C	5.696	23	4
B		C			
B		C	5.647	34	2
		C			
		C	4.810	21	1
		C			
		C	4.679	28	0

Hypothesis 3 analyses

Analysis of Variance Procedure

Dependent Variable: EXERCISE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	1116.664100	159.523443	37.87	0.0001
Error	301	1267.808392	4.211988		
Corrected Total	308	2384.472492			

R-Square	C.V.	Root MSE	EXERCISE Mean
0.468307	45.10417	2.052313	4.55016181

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Gen PA	7	1116.664100	159.523443	37.87	0.0001

Hypothesis 3 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EXERCISE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 301 MSE= 4.211988
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 16.47096

Number of Means	2	3	4	5	6	7	8
Critical Range	1.421	1.494	1.541	1.576	1.606	1.631	1.651

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	Q33
	A	9.308	13	8
	B	7.152	33	7
	B			
C	B	6.667	12	6
C				
C	D	5.462	78	4
	D			
	D	4.600	5	5
	D			
E	D	4.333	36	3
E				
E		3.045	110	2
	F	1.318	22	1

Hypothesis 4 analyses

Analysis of Variance Procedure

Dependent Variable: SMOKL

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	683.1062301	341.5531151	41.15	0.0001
Error	307	2548.2776409	8.3005786		
Corrected Total	309	3231.3838710			

R-Square	C.V.	Root MSE	SMOKE Mean
0.211397	33.81797	2.881072	8.51935484

Source	DF	Anova SS	Mean Square	F Value	Pr > F
serious attempt	2	683.1062301	341.5531151	41.15	0.0001

Hypothesis 4 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: SMOKE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha 0.05 df= 307 MSE 8.300579
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 45.54651

Number of Means 2 3
Critical Range 1.199 1.261

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	Q39
A	9.299	241	2
B	6.577	26	0
C	5.326	43	1

Hypothesis 4 analyses

Analysis of Variance Procedure

Dependent Variable: SMOKE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	313.7936148	156.8968074	16.51	0.0001
Error	307	2917.5902561	9.5035513		
Corrected Total	309	3231.3838710			

R-Square	C.V.	Root MSE	SMOKE Mean
0.097108	36.18564	3.082783	8.51935484

Source	DF	Anova SS	Mean Square	F Value	Pr > F
quit program	2	313.7936148	156.8968074	16.51	0.0001

Hypothesis 4 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: SMOKE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df= 307 MSE 9.503551
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes 32.37269

Number of Means 2 3
Critical Range 1.522 1.601

Means with the same letter are not significantly different.

Duncan Grouping		Mean	N	Q40
	A	9.224	205	2
	A			
B	A	8.077	13	1
B				
B		7.911	92	0

Hypothesis 5 analyses

Analysis of Variance Procedure

Dependent Variable: ABUSE

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	33.45750774	16.72875387	2.36	0.0959
Error	304	2152.21675936	7.07966039		
Corrected Total	306	2185.67426710			

R-Square	C.V.	Root MSE	ABUSE Mean
0.015308	33.12467	2.660763	8.03257329

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Q46	2	33.45750774	16.72875387	2.36	0.0959

Hypothesis 5 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: ABUSE

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha 0.05 df= 304 MSE= 7.07966
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.01889

Number of Means 2 3
Critical Range 1.996 2.099

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	Q46
A	9.200	5	3
A			
A	8.247	186	2
A			
A	7.638	116	1

Hypothesis 5 analyses

Analysis of Variance Procedure

Dependent Variable: EATING

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	49.09210445	24.54605222	3.91	0.0210
Error	304	1906.04796070	6.26989461		
Corrected Total	306	1955.14006515			

R-Square	C.V.	Root MSE	EATING Mean
0.025109	39.34087	2.503976	6.36482085

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Q46	2	49.09210445	24.54605222	3.91	0.0210

Hypothesis 5 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: EATING

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha= 0.05 df 304 MSE= 6.269895
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.01889

Number of Means	2	3
Critical Range	1.879	1.976

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	Q46
A	8.200	5	3
A			
B A	6.591	186	2
B			
B	5.922	116	1

Hypothesis 5 analyses

Analysis of Variance Procedure

Dependent Variable: STRESS

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	2	23.25190170	11.62595085	3.08	0.0474
Error	303	1144.06835974	3.77580317		
Corrected Total	305	1167.32026144			

R-Square	C.V.	Root MSE	STRESS Mean
0.019919	26.52104	1.943143	7.32679739

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Q46	2	23.25190170	11.62595085	3.08	0.0474

Hypothesis 5 analyses

Analysis of Variance Procedure

Duncan's Multiple Range Test for variable: STRESS

NOTE: This test controls the type I comparisonwise error rate, not the experimentwise error rate

Alpha 0.05 df = 303 MSE= 3.775803
WARNING: Cell sizes are not equal.
Harmonic Mean of cell sizes= 14.01698

Number of Means 2 3
Critical Range 1.458 1.533

Means with the same letter are not significantly different.

Duncan Grouping	Mean	N	Q46
A	7.600	5	3
A			
A	7.541	185	2
A			
A	6.974	116	1

APPENDIX I

T-TEST TABLES

TTEST PROCEDURE

Variable: SAFETY

GENDER	N	Mean	Std Dev	Std Error
1	207	9.34782609	1.04963360	0.07295458
2	103	9.00970874	1.21667456	0.11988251

Variances	T	DF	Prob>|T|
Unequal	2.4093	179.4	0.0170
Equal	2.5313	308.0	0.0119

For H0: Variances are equal, F' = 1.34 DF = (102,206) Prob>F' = 0.0771

Variable: EATING

GENDER	N	Mean	Std Dev	Std Error
1	207	6.61352657	2.38633054	0.16586144
2	103	5.86407767	2.71541909	0.26755819

Variances	T	DF	Prob>|T|
Unequal	2.3807	182.1	0.0183
Equal	2.4860	308.0	0.0134

For H0: Variances are equal, F' = 1.29 DF = (102,206) Prob>F' = 0.1221

Variable: STRESS

GENDER	N	Mean	Std Dev	Std Error
1	207	7.46859903	1.93027225	0.13416320
2	103	7.00970874	1.97283088	0.19438880

Variances	T	DF	Prob>|T|
Unequal	1.9429	199.9	0.0534
Equal	1.9572	308.0	0.0512

For H0: Variances are equal, F' = 1.04 DF = (102,206) Prob>F' = 0.7839

Variable: EATING

SNACK	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	116	7.03448276	2.34402491	0.21763725	0	10.00000000
1	193	5.96891192	2.54931922	0.18350401	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	3.7431	258.4	0.0002
Equal	3.6655	307.0	0.0003

For H0: Variances are equal, F' = 1.18 DF = (192,115) Prob>F' = 0.3252

Variable: EATING

DIET1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	250	6.05200000	2.49523562	0.15781256	0.00000000	10.00000000
1	60	7.66666667	2.20682045	0.28489929	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-4.9577	98.6	0.0001
Equal	-4.5982	308.0	0.0000

For H0: Variances are equal, F' = 1.28 DF = (249,59) Prob>F' = 0.2607

Variable: EATING

DIET2	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	285	6.24912281	2.50865564	0.14859994	0.00000000	10.00000000
1	25	7.68000000	2.32235513	0.46447103	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-2.9342	29.1	0.0065
Equal	-2.7498	308.0	0.0063

For H0: Variances are equal, F' = 1.17 DF = (284,24) Prob>F' = 0.6775

Variable: EATING

DIET3	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	304	6.30592105	2.50184707	0.14349077	0.00000000	10.00000000
1	6	9.33333333	1.63299316	0.66666667	6.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-4.4395	5.5	0.0056
Equal	-2.9490	308.0	0.0034

For H0: Variances are equal, F' = 2.35 DF = (303,5) Prob>F' = 0.3392

Variable: EATING

DIET4	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	293	6.26621160	2.51654491	0.14701812	0.00000000	10.00000000
1	17	8.05882353	1.98338688	0.48104198	5.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-3.5638	19.1	0.0021
Equal	-2.8839	308.0	0.0042

For H0: Variances are equal, F' = 1.61 DF = (292,16) Prob>F' = 0.2673

Variable: EATING

DIET5	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	280	6.19642857	2.50890631	0.14993583	0.00000000	10.00000000
1	30	7.93333333	2.08332184	0.38036079	3.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-4.2483	38.6	0.0001
Equal	-3.6576	308.0	0.0003

For H0: Variances are equal, F' = 1.45 DF = (279,29) Prob>F' = 0.2289

Variable: EATING

DIET6	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	299	6.28428094	2.50424882	0.14482445	0.00000000	10.00000000
1	11	8.54545455	2.01809992	0.60848002	4.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-3.6151	11.2	0.0040
Equal	-2.9580	308.0	0.0033

For H0: Variances are equal, F' = 1.54 DF = (298,10) Prob>F' = 0.4586

Variable: EATING

Q32	N	Mean	Std Dev	Std Error	Minimum	Maximum
1	281	6.45551601	2.55908323	0.15266211	0.00000000	10.00000000
2	29	5.48275862	1.93871625	0.36001057	2.00000000	9.00000000

Variances	T	DF	Prob>|T
Unequal	2.4876	38.8	0.0173
Equal	1.9878	308.0	0.0477

For H0: Variances are equal, F' = 1.74 DF (280,28) Prob>F' = 0.0790

Variable: EXERCISE

Q35_1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	243	3.86419753	2.48343148	0.15931220	0.00000000	10.00000000
1	67	6.95522388	2.42732448	0.29654488	1.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-9.1823	107.2	0.0001
Equal	-9.0636	308.0	0.0000

For H0: Variances are equal, F' 1.05 DF = (242,66) Prob>F' 0.8463

Variable: EXERCISE

Q35_2	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	288	4.36805556	2.71720939	0.16011310	0.00000000	10.00000000
1	22	6.68181818	2.71479831	0.57879694	1.00000000	10.00000000

Variances	T	DF	Prob > |T|
Unequal	-3.8528	24.3	0.0008
Equal	-3.8499	308.0	0.0001

For H0: Variances are equal, F' = 1.00 DF = (287,21) Prob>F' = 1.0000

Variable: EXERCISE

Q35_3	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	284	4.33098592	2.72593053	0.16175422	0.00000000	10.00000000
1	26	6.73076923	2.39261685	0.46923077	3.00000000	10.00000000

Variances	T	DF	Prob > |T|
Unequal	-4.8351	31.3	0.0001
Equal	-4.3372	308.0	0.0000

For H0: Variances are equal, F' = 1.30 DF = (283,25) Prob>F' = 0.4429

Variable: EXERCISE

Q35_4	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	303	4.45874587	2.73149058	0.15692003	0.00000000	10.00000000
1	7	7.71428571	3.09377255	1.16933611	1.00000000	10.00000000

Variances	T	DF	Prob > |T|
Unequal	-2.7594	6.2	0.0318
Equal	-3.1090	308.0	0.0021

For H0: Variances are equal, F' = 1.28 DF = (6,302) Prob>F' = 0.5296

Variable: EXERCISE

Q35_5	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	305	4.49180328	2.77099017	0.15866644	0.00000000	10.00000000
1	5	7.00000000	2.12132034	0.94868330	4.00000000	9.00000000

Variances	T	DF	Prob>|T|
Unequal	-2.6077	4.2	0.0569
Equal	-2.0130	308.0	0.0450

For H0: Variances are equal, F' = 1.71 DF = (304,4) Prob>F' = 0.6541

Variable: SMOKE

Q37_1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	261	9.32950192	2.44765416	0.15150599	0	10.00000000
1	49	4.20408163	3.50582605	0.50083229	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	9.7954	57.1	0.0001
Equal	12.4670	308.0	0.0000

For H0: Variances are equal, F' = 2.05 DF = (48,260) Prob>F' = 0.0004

Variable: SMOKE

Q37_2	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	266	9.26691729	2.55656674	0.15675316	0	10.00000000
1	43	3.86046512	3.14401469	0.47945774	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	10.7179	51.4	0.0001
Equal	12.4377	307.0	0.0000

For H0: Variances are equal, F' = 1.51 DF = (42,265) Prob>F' = 0.0571

Variable: SMOKE

Q38_1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	159	9.24528302	2.58945520	0.20535716	0	10.00000000
1	151	7.75496689	3.65142326	0.29714861	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	4.1260	269.2	0.0001
Equal	4.1614	308.0	0.0000

For H0: Variances are equal, F' = 1.99 DF = (150,158) Prob>F' = 0.0000

Variable: SMOKE

Q38_2	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	177	9.20903955	2.65354131	0.19945238	0	10.00000000
1	133	7.60150376	3.68851586	0.31983489	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	4.2648	228.7	0.0001
Equal	4.4625	308.0	0.0000

For H0: Variances are equal, F' = 1.93 DF = (132,176) Prob>F' = 0.0001

Variable: SMOKE

Q38_5	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	283	8.63604240	3.12137016	0.18554620	0	10.00000000
1	26	7.19230769	4.15710698	0.81527575	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	1.7267	27.7	0.0954
Equal	2.1891	307.0	0.0293

For H0: Variances are equal, F' = 1.77 DF = (25,282) Prob>F' = 0.0292

Variable: SMOKE

Q41	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	71	9.23943662	2.43465919	0.28894089	0	10.00000000
1	239	8.30543933	3.41074854	0.22062298	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	2.5692	159.5	0.0111
Equal	2.1493	308.0	0.0324

For H0: Variances are equal, F' = 1.96 DF = (238,70) Prob>F' = 0.0012

Variable: SAFETY

Q41	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	71	9.43661972	0.87394662	0.10371838	5.00000000	10.00000000
1	239	9.14225941	1.26218961	0.08164426	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	2.2300	165.0	0.0271
Equal	1.8376	308.0	0.0671

For H0: Variances are equal, F' = 2.09 DF (238,70) Prob>F' = 0.0004

Variable: EATING

Q41	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	71	5.91549296	2.61723125	0.31060820	0	10.00000000
1	239	6.49790795	2.48165450	0.16052488	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-1.6658	110.1	0.0986
Equal	-1.7146	308.0	0.0874

For H0: Variances are equal, F' = 1.11 DF = (70,238) Prob>F' = 0.5535

Variable: STRESS

Q41	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	71	6.70422535	1.90783622	0.22641850	1.00000000	10.00000000
1	238	7.49579832	1.93730401	0.12557677	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-3.0573	116.4	0.0028
Equal	-3.0320	307.0	0.0026

For H0: Variances are equal, F' = 1.03 DF = (237,70) Prob>F' = 0.9016

Variable: SMOKE

Q42	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	222	8.76576577	2.96878163	0.19925158	0	10.00000000
1	88	7.89772727	3.76932499	0.40181139	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	1.9354	131.9	0.0551
Equal	2.1432	308.0	0.0329

For H0: Variances are equal, F' = 1.61 DF = (87,221) Prob>F' = 0.0056

Variable: SAFETY

Q42	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	222	9.28828829	1.05407966	0.07074519	5.00000000	10.00000000
1	88	9.01136364	1.46604729	0.15628117	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	1.6143	124.3	0.1090
Equal	1.8551	308.0	0.0645

For H0: Variances are equal, F' = 1.93 DF = (87,221) Prob>F' = 0.0001

Variable: ABUSE

Q42	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	222	8.22072072	2.65359373	0.17809755	0	10.00000000
1	88	7.51136364	2.77507096	0.29582356	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	2.0543	153.6	0.0416
Equal	2.0946	308.0	0.0370

For H0: Variances are equal, F' = 1.09 DF = (87,221) Prob>F' = 0.5972

Variable: EXERCISE

Q42	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	222	4.88288288	2.85783432	0.19180528	0	10.00000000
1	88	3.64772727	2.35396351	0.25093335	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	3.9107	192.5	0.0001
Equal	3.5983	308.0	0.0004

For H0: Variances are equal, F' = 1.47 DF = (221,87) Prob>F' = 0.0381

Variable: STRESS

Q42	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	222	7.44594595	1.93427217	0.12981985	1.00000000	10.00000000
1	87	6.97701149	1.98234657	0.21252986	3.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	1.8829	153.8	0.0616
Equal	1.9033	307.0	0.0579

For H0: Variances are equal, F' = 1.05 DF = (86,221) Prob>F' = 0.7642

Variable: EXERCISE

Q43_1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	133	5.03007519	2.89445617	0.25098118	0	10.00000000
1	174	4.16091954	2.62655872	0.19911890	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	2.7129	269.1	0.0071
Equal	2.7484	305.0	0.0063

For H0: Variances are equal, F' = 1.21 DF = (132,173) Prob>F' = 0.2309

Variable: STRESS

Q43_1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	133	7.56390977	1.90832857	0.16547307	2.00000000	10.00000000
1	173	7.14450867	1.97864659	0.15043371	1.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	1.8754	288.9	0.0617
Equal	1.8665	304.0	0.0629

For H0: Variances are equal, F' = 1.08 DF = (172,132) Prob>F' = 0.6646

Variable: ABUSE

Q43_3	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	268	8.17537313	2.58108756	0.15766502	0	10.00000000
1	39	7.05128205	3.09455139	0.49552480	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	2.1617	46.0	0.0359
Equal	2.4746	305.0	0.0139

For H0: Variances are equal, F' = 1.44 DF = (38,267) Prob>F' = 0.1084

Variable: EATING

Q43_3	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	268	6.27611940	2.54661938	0.15555954	0.00000000	10.00000000
1	39	6.97435897	2.33381526	0.37370953	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-1.7249	52.1	0.0905
Equal	-1.6160	305.0	0.1071

For H0: Variances are equal, F' = 1.19 DF = (267,38) Prob>F' = 0.5267

Variable: EXERCISE

Q43_3	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	268	4.68656716	2.83350185	0.17308367	0	10.00000000
1	39	3.51282051	2.08846197	0.33442156	0	9.00000000

Variances	T	DF	Prob>|T|
Unequal	3.1170	60.5	0.0028
Equal	2.4889	305.0	0.0133

For H0: Variances are equal, F' = 1.84 DF = (267,38) Prob>F' = 0.0252

Variable: EATING

Q43_5	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	291	6.28522337	2.55513443	0.14978463	0.00000000	10.00000000
1	16	7.81250000	1.32759180	0.33189795	6.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-4.1943	21.7	0.0004
Equal	-2.3707	305.0	0.0184

For H0: Variances are equal, F' = 3.70 DF = (290,15) Prob>F' = 0.0053

Variable: SMOKE

Q43_8	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	305	8.51147541	3.24960009	0.18607156	0.00000000	10.00000000
1	2	10.00000000	0.00000000	0.00000000	10.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-7.9997	304.0	0.0001
Equal	-0.6467	305.0	0.5183

NOTE: All values are the same for one CLASS level.

Variable: SMOKE

Q43_10	N	Mean	Std Dev	Std Error
0	294	8.47278912	3.29198132	0.19199225
1	13	9.61538462	1.38675049	0.38461538

Variances	T	DF	Prob>|T|
Unequal	-2.6580	18.7	0.0157
Equal	-1.2450	305.0	0.2141

For H0: Variances are equal, F' = 5.64 DF = (293,12) Prob>F' = 0.0018

Variable: EATING

Q43_10	N	Mean	Std Dev	Std Error
0	294	6.30612245	2.53470719	0.14782713
1	13	7.69230769	2.01596195	0.55912724

Variances	T	DF	Prob>|T|
Unequal	-2.3968	13.7	0.0314
Equal	-1.9437	305.0	0.0528

For H0: Variances are equal, F' = 1.58 DF = (293,12) Prob>F' = 0.3720

Variable: EXERCISE

Q43_10	N	Mean	Std Dev	Std Error
0	294	4.60884354	2.80176505	0.16340226
1	13	2.92307692	1.32045058	0.36622710

Variances	T	DF	Prob>|T|
Unequal	4.2036	17.2	0.0006
Equal	2.1562	305.0	0.0318

For H0: Variances are equal, F' 4.50 DF (293,12) Prob>F' = 0.0054

Variable: EATING

Q43_11	N	Mean	Std Dev	Std Error
0	258	6.23643411	2.54498631	0.15844393
1	49	7.04081633	2.34484527	0.33497790

Variances	T	DF	Prob>|T|
Unequal	-2.1707	71.2	0.0333
Equal	-2.0528	305.0	0.0409

For H0: Variances are equal, F' = 1.18 DF = (257,48) Prob>F' = 0.5026

Variable: SAFETY

Q43_12	N	Mean	Std Dev	Std Error
0	282	9.26595745	1.13666364	0.06768734
1	25	8.56000000	1.58324561	0.31664912

Variances	T	DF	Prob>|T|
Unequal	2.1802	26.2	0.0384
Equal	2.8719	305.0	0.0044

For H0: Variances are equal, F' = 1.94 DF = (24,281) Prob>F' = 0.0125

Variable: STRESS

Q43_12	N	Mean	Std Dev	Std Error
0	281	7.41281139	1.93659668	0.11552767
1	25	6.36000000	1.95533458	0.39106692

Variances	T	DF	Prob>|T|
Unequal	2.5818	28.4	0.0153
Equal	2.6028	304.0	0.0097

For H0: Variances are equal, F' = 1.02 DF = (24,280) Prob>F' = 0.8819

Variable: EATING

Q45_1	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	232	6.10775862	2.51429337	0.16507145	0.00000000	10.00000000
1	75	7.16000000	2.41638551	0.27902016	1.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-3.2457	129.8	0.0015
Equal	-3.1803	305.0	0.0016

For H0: Variances are equal, F' = 1.08 DF = (231,74) Prob>F' 0.7007

Variable: SMOKE

Q45_2	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	271	8.65313653	3.14076827	0.19078809	0	10.00000000
1	36	7.52777778	3.82089078	0.63681513	0	10.00000000

Variances	T	DF	Prob>|T|
Unequal	1.6928	41.5	0.0980
Equal	1.9664	305.0	0.0502

For H0: Variances are equal, F' = 1.48 DF = (35,270) Prob>F' = 0.0923

Variable: EATING

Q45_2	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	271	6.19926199	2.50868111	0.15239152	0.00000000	10.00000000
1	36	7.61111111	2.34554627	0.39092438	1.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-3.3649	46.3	0.0015
Equal	-3.1957	305.0	0.0015

For H0: Variances are equal, F' = 1.14 DF = (270,35) Prob>F' 0.6502

Variable: EATING

Q45_3	N	Mean	Std Dev	Std Error	Minimum	Maximum
0	248	6.18548387	2.54789565	0.16179154	0.00000000	10.00000000
1	59	7.11864407	2.31252024	0.30106449	2.00000000	10.00000000

Variances	T	DF	Prob>|T|
Unequal	-2.7303	94.5	0.0075
Equal	-2.5719	305.0	0.0106

For H0: Variances are equal, F' = 1.21 DF = (247,58) Prob>F' = 0.3810

APPENDIX J

CORRELATION ANALYSIS

CORRELATION ANALYSIS

9 'VAR' Variables: BMI AGE EDUC SMOKE SAFETY ABUSI EATING EXERCISE STRESS

Simple Statistics

Variable	N	Mean	Std Dev	Sum
BMI	307	27.16275	5.86332	8339
AGE	309	40.87055	10.71908	12629
EDUC	308	15.24026	2.67831	4694
SMOKE	311	8.52412	3.22969	2651
SAFETY	311	9.21222	1.18865	2865
ABUSE	311	8.02572	2.70113	2496
EATING	311	6.37621	2.52535	1983
EXERCISE	311	4.54019	2.77619	1412
STRESS	310	7.31613	1.95336	2268

Simple Statistics

Variable	Minimum	Maximum
BMI	17.34269	54.93237
AGE	17.00000	64.00000
EDUC	7.00000	21.00000
SMOKE	0	10.00000
SAFETY	2.00000	10.00000
ABUSE	0	10.00000
EATING	0	10.00000
EXERCISE	0	10.00000
STRESS	1.00000	10.00000

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	BMI	AGE	EDUC	SMOKE	SAFETY
BMI	1.00000	0.07249	-0.16967	0.00994	-0.06551
	0.0	0.2053	0.0030	0.8623	0.2525
	307	307	305	307	307
AGE	0.07249	1.00000	-0.17134	-0.15719	-0.00398
	0.2053	0.0	0.0026	0.0056	0.9445
	307	309	307	309	309
EDUC	-0.16967	-0.17134	1.00000	0.07175	-0.04193
	0.0030	0.0026	0.0	0.2092	0.4635
	305	307	308	308	308
SMOK	0.00994	-0.15719	0.07175	1.00000	0.28688
	0.8623	0.0056	0.2092	0.0	0.0001
	307	309	308	311	311
SAFE	-0.06551	-0.00398	-0.04193	0.28688	1.00000
	0.2525	0.9445	0.4635	0.0001	0.0
	307	309	308	311	311
ABUSE	-0.08188	-0.06992	0.02584	0.24731	0.27057
	0.1524	0.2203	0.6515	0.0001	0.0001
	307	309	308	311	311
EAT	-0.04071	0.18004	0.00799	0.15491	0.28926
	0.4773	0.0015	0.8889	0.0062	0.0001
	307	309	308	311	311
EXERC	-0.43609	-0.02917	0.24424	0.07625	0.18216
	0.0001	0.6094	0.0001	0.1798	0.0013
	307	309	308	311	311
STR	-0.03333	0.08401	-0.04877	0.01235	0.17188
	0.5607	0.1406	0.3937	0.8286	0.0024
	307	309	308	310	310

CORRELATION ANALYSIS

Pearson Correlation Coefficients / Prob > |R| under Ho: Rho=0
/ Number of Observations

	ABUSE	EATING	EXERCISE	STRESS
BMI	-0.08188	-0.04071	-0.43609	-0.03333
	0.1524	0.4773	0.0001	0.5607
	307	307	307	307
AGE	-0.06992	0.18004	-0.02917	0.08401
	0.2203	0.0015	0.6094	0.1406
	309	309	309	309
EDUC	0.02584	0.00799	0.24424	-0.04877
	0.6515	0.8889	0.0001	0.3937
	308	308	308	308
SMOK	0.24731	0.15491	0.07625	0.01235
	0.0001	0.0062	0.1798	0.8286
	311	311	311	310
SAFE	0.27057	0.28926	0.18216	0.17188
	0.0001	0.0001	0.0013	0.0024
	311	311	311	310
ABUSE	1.00000	0.13950	0.11773	0.04358
	0.0	0.0138	0.0380	0.4445
	311	311	311	310
EAT	0.13950	1.00000	0.33579	0.26766
	0.0138	0.0	0.0001	0.0001
	311	311	311	310
EXERC	0.11773	0.33579	1.00000	0.10407
	0.0380	0.0001	0.0	0.0673
	311	311	311	310
STR	0.04358	0.26766	0.10407	1.00000
	0.4445	0.0001	0.0673	0.0
	310	310	310	310

APPENDIX K

CHI-SQUARE TABLES

TABLE OF INTEREST IN THE WELLNESS CENTER BY GENDER

INTEREST GENDER

Frequency| Row Pct | Col Pct	1	2	Total
1 Very interested	42 | 76.36 | 20.90	13 | 23.64 | 12.75	55
2 Interested	58 | 74.36 | 28.86	20 | 25.64 | 19.61	78
3 Somewhat Interested	90 | 65.69 | 44.78	47 | 34.31 | 46.08	137
4 Not Interested	11 | 33.33 | 5.47	22 | 66.67 | 21.57	33
Total	201	102	303

STATISTICS FOR TABLE OF Q47 BY GENDER

Statistic	DF	Value	Prob
Chi-Square	3	20.846	0.0001

TABLE OF INCONVENIENT TIME BY GENDER

INCONVENIENT TIME GENDER

Frequency Row Pct Col Pct	1	2	Total
0	172 64.91 84.31	93 35.09 91.18	265
1	32 78.05 15.69	9 21.95 8.82	41
Total	204	102	306

STATISTICS FOR TABLE OF Q48_2 BY GENDER

Statistic	DF	Value	Prob
Chi-Square	1	2.760	0.097

TABLE OF COST BY BMICODE

Q48_5 BMICODE

Frequency Row Pct Col Pct	acceptable	morbid	over	severe	under	Total
0	125 62.81 70.62	3 1.51 75.00	35 17.59 55.56	28 14.07 56.00	8 4.02 88.89	199
1	52 50.00 29.38	1 0.96 25.00	28 26.92 44.44	22 21.15 44.00	1 0.96 11.11	104
Total	177	4	63	50	9	303

STATISTICS FOR TABLE OF COST BY BMICODE

Statistic	DF	Value	Prob
Chi-Square	4	9.165	0.057

WARNING: 30% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

TABLE OF LACK OF TIME BY EDUCGP

Q48_1 EDUCGP

Frequency / Row Pct / Col Pct	<High school	Bachelors	Graduate	Some college	Total
0	4	47	42	76	169
	2.37	27.81	24.85	44.97	
	66.67	51.65	72.41	51.01	
1	2	44	16	73	135
	1.48	32.59	11.85	54.07	
	33.33	48.35	27.59	48.99	
Total	6	91	58	149	304

STATISTICS FOR TABLE OF LACK OF TIME BY EDUCGP

Statistic	DF	Value	Prob
Chi-Square	3	8.788	0.032

WARNING: 25% of the cells have expected counts less than 5. Chi-Square may not be a valid test.

TABLE OF LUNCH TIME BY GENDER

Q49_2 GENDER

Frequency / Row Pct / Col Pct	1	2	Total
0	159	89	248
	64.11	35.89	
	77.94	87.25	
1	45	13	58
	77.59	22.41	
	22.06	12.75	
Total	204	102	306

STATISTICS FOR TABLE OF LUNCH TIME BY GENDER

Statistic	DF	Value	Prob
Chi-Square	1	3.840	0.050

TABLE OF EARLY EVENING BY GENDER

Q49_3 GENDER

Frequency / Row Pct / Col Pct	1	2	Total
0	104	64	168
	61.90	38.10	
	50.98	62.75	
1	100	38	138
	72.46	27.54	
	49.02	37.25	
Total	204	102	306

STATISTICS FOR TABLE OF EARLY EVENING BY GENDER

Statistic	DF	Value	Prob
Chi-Square	1	3.801	0.051

TABLE OF LUNCH TIME BY CLASSIF

Q49_2 CLASSIF

Frequency / Row Pct / Col Pct	1	2	3	4	5	Total
0	80	22	47	28	65	242
	33.06	9.09	19.42	11.57	26.86	
	77.67	95.65	85.45	90.32	74.71	
1	23	1	8	3	22	57
	40.35	1.75	14.04	5.26	38.60	
	22.33	4.35	14.55	9.68	25.29	
Total	103	23	55	31	87	299

STATISTICS FOR TABLE OF LUNCH TIME BY CLASSIF

Statistic	DF	Value	Prob
Chi-Square	4	8.622	0.071

TABLE OF LUNCH TIME BY AGEGP

Q49_2 AGEGP

Frequency / Row Pct / Col Pct	1	2	3	4	5	Total
0	15	69	69	65	29	247
	6.07	27.94	27.94	26.32	11.74	
	93.75	83.13	71.87	89.04	78.38	
1	1	14	27	8	8	58
	1.72	24.14	46.55	13.79	13.79	
	6.25	16.87	28.12	10.96	21.62	
Total	16	83	96	73	37	305

STATISTICS FOR TABLE OF Q49_2 BY AGEGP

Statistic	DF	Value	Prob
Chi-Square	4	10.355	0.035

TABLE OF EARLY EVENING BY AGEGP

Q49_3 AGEGP

Frequency / Row Pct / Col Pct	1	2	3	4	5	Total
0	6	37	61	38	26	168
	3.57	22.02	36.31	22.62	15.48	
	37.50	44.58	63.54	52.05	70.27	
1	10	46	35	35	11	137
	7.30	33.58	25.55	25.55	8.03	
	62.50	55.42	36.46	47.95	29.73	
Total	16	83	96	73	37	305

STATISTICS FOR TABLE OF EARLY EVENING BY AGEGP

Statistic	DF	Value	Prob
Chi-Square	4	12.197	0.016

TABLE OF WEEKENDS BY AGEGP

Q49_4 AGEGP

Frequency Row Pct Col Pct	1	2	3	4	5	Total
0	9 4.05 56.25	57 25.68 68.67	67 30.18 69.79	56 25.23 76.71	33 14.86 89.19	222
1	7 8.43 43.75	26 31.33 31.33	29 34.94 30.21	17 20.48 23.29	4 4.82 10.81	83
Total	16	83	96	73	37	305

STATISTICS FOR TABLE OF WEEKENDS BY AGEGP

Statistic	DF	Value	Prob
Chi-Square	4	8.946	0.062

VITA

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