

OUTCOMES OF A FIVE-YEAR UNIVERSITY-BASED
WORKSITE WELLNESS PROGRAM

by

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ABSTRACT

Worksite health promotion (WHP) programs have emerged as a core strategy for improving the overall health and well-being of employees at the workplace. The primary objectives of most worksite health promotion programs are to reduce healthcare costs and absenteeism while improving employee productivity and morale. Enrollment and participation are critical to WHP program success. This study examines the impact of WHP programs on long-term behavior change and the outcomes that companies and universities expect from offering worksite health promotion programs. While many worksite health programs have been implemented in the last several years, very few have been evaluated in a university setting.

The University of Utah's Employees Wellness Program, WellU, started in 2007 with the overall objective to increase the self-health behaviors of employees of the university. This study will attempt to answer the following research questions: Did the Well U program produce a measureable impact on the employee's health and wellbeing? What was the primary motivating factor toward participation? What other factors motivated participation in the WellU program? How effective was the monetary incentive of \$40 per month for enrollment, on long-term health outcomes?

Conducted in two phases, this research employed focus groups to gather qualitative data on reasons to enroll or not enroll and perceived benefits, and a quantitative study involving an online survey distributed to the entire benefits eligible employee population ($n =$

10,331), to determine the factors that motivate or inhibit program participation and to evaluate behavior change.

Overall, the WellU program achieved its objective of increasing employee's health awareness that would result in positive behavior change. The overall health status of HRA only group remained constant. The HRA+ group had significant improvements in all reported areas of health. Non participants reported levels of physical activity consistent with both participant groups however they consumed significantly fewer fruits and vegetable consumption with only 15% eating the recommended daily allowance.

The University of Utah's WellU program is working. The incentive was successful in attracting enrollment and the HRA was an effective tool in making employees more aware of their health risks resulting in significant self-motivated behavior change.

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CHAPTER 1

INTRODUCTION

Mainstream media is widely reported that the United States is in a health care crisis. As early as 1970, this crisis has predominantly revolved around the cost, lack and availability of care to every American (Ennes, 1970; Kelton, 2007). Further compounding this problem is the general state of health in this country. Chronic diseases have become the leading cause of death (Chronic Disease and Health Promotion, 2012). With obesity reaching epidemic proportions and activity levels decreasing, many experts agree we are in the midst of a health crisis (Hunnicut & Jahn, 2011; Pronk, 2008; Warren, 2010). Health care costs have continued to rise at a rate of over 7% per year in the past two decades, and now account for 17.9% of our nation's Gross Domestic Product (GDP) (Mayne, Girod, & Weltz, 2011). Employers share in the burden of these increases and the cost of health care to business and industry can be significant. As early as 1998, the cost of obesity to U.S. businesses was reported on and considered to be substantial (Thompson, Edelsber, Kinsey, & Oster, 1998). And, with the continued rise in obesity in this country, these costs continue to increase. In 2005, Finkelstein and associates found that although grade 3 level of obesity (BMI >40) accounted for only 3% of the employee population, they were responsible for over 27% of health care costs, not representing the other associated costs to business which include absenteeism, presenteeism and disability (Finkelstein, Fiebelkorn, & Wang, 2005).

Workplace health promotion (WHP) programs provide an opportunity for employers to encourage and facilitate healthy behaviors, which in turn can lower health care costs while improving employee productivity, loyalty and retention. (Chapman, 2012; Hunnicutt & Jahn, 2011; Merrill, Hyatt, Aldana, & Kinnersley, 2011). The most prevalent chronic diseases affecting Americans are largely preventable and directly attributable to behavioral

and lifestyle choices, such as diet and activity levels (CDC Data Stats, 2011; Schoenborn & Adams, 2010). Obesity is identified by the CDC as a major risk factor for other chronic health conditions such as diabetes, heart disease, and stroke. The contributing lifestyle factors of lack of physical activity, poor dietary habits, tobacco use and excessive alcohol consumption are also to blame for many of these chronic conditions. Chronic diseases affect one out of every two adults in the U.S. and are the leading cause of death and disability (Chronic Disease and Health Promotion, 2012). Since modifiable health behaviors are the cause of many of these diseases, programs to educate and teach the skills necessary to reduce health risks are what drive the need for work site health promotion programs.

Nutrition has become especially important as Americans consume an increased amount of inexpensive, fast, processed foods (Fishbein, 2001). Exercise levels and movement habits in the U.S. have also decreased (Chenoweth, 2007; Pronk, 2011). Childhood obesity has tripled in the past 30 years (CDC Data Stats, 2011). Overweight and obese children become overweight teenagers, and often overweight adults. At the current rate it is predicted that if these trends continue, by 2030, 86.3% of adults will be overweight and 51.1% obese (Wang, May, Liang, Caballero, & Kumanyika, 2008). The reduction of physical education programs and classes in schools has had a direct impact on the physical activity levels of children and young adults (Villaire, 2010). One study shows decreases of 14% in a 5-year span in the amount of physical activity of elementary aged children. That, combined with 3+ hours a day of sedentary behaviors at home, watching TV and using computers have contributed to this obesity epidemic (Patel, Berstein, Deka, Feigelson, Campbell & Gapstur, 2010; Pronk, 2010).

The replacement of leisure time activities with TV, computer use, and with other modern conveniences leading to leisure time inactivity are partly responsible for these levels of inactivity (Patel, et al., 2010). In a study looking at leisure time spent sitting, in relation to total mortality in a prospective cohort of U.S. adults, Patel and associates (2010) found that leisure time spent sitting was positively associated with many causes of mortality in both women and men; with a stronger association for women and a stronger association with cardiovascular mortality (Patel, et al., 2010). Conversely, “mortality rates were 25% lower in both men and women who reported the most versus the least amount of physical activity” (Patel, et al., 2010, p. 425). Since a large percentage of time at work is spent sitting, the implications of this study encourage employers to not only consider the use of facilities to also increase physical activity while at work, but simply encouraging employees to get up from their desks and move more often.

The lifestyle of the typical American combined with the lack of time, knowledge, skills and incentives to take care of their health, contribute significantly to this health care crisis. Business and industry share the burden of these costs both in increased insurance premiums as well as decreases in productivity and presenteeism (Burton, Chen, Conti, Schultz, & Edington, 2006; Hemp, 2004; Mills, Kessler, Cooper, & Sullivan, 2007). Presenteeism is defined as “the reduction in productivity at work because of a person’s health condition” (Brooks, Hagen, Sathyanarayanan, Schultz, & Edington, 2010). Employer sponsored health insurance premiums are increasing at twice the rate of inflation (Hunnicut & Jahn, 2011). In some cases, the burden of these increases is, in part, being shifted to the employee via co-pays and increases in monthly premiums (Murphy, 2011). Placing some financial responsibility on the employee may create more initiative and

incentives for employees to begin paying closer attention to their health and well-being. This could be good news for worksite health promotion programs.

Worksite health promotion programs are becoming a core strategy to prevent disease, as evidenced by the efforts put forth in the National Prevention Strategy; workplaces are key “partners in prevention” (National Prevention Strategy Report, 2011, p. 9). Employers view WHP programs as a means to improve their employees’ health and well-being, thereby increasing employee productivity and morale, decreasing employee absenteeism, and lowering overall healthcare costs (Chapman, 2005; Department of Health and Human Services [DHHS], 2003; Harden et al., 1999; Pronk, 2004). Additionally, the United States Department of Health and Human Services has recognized the value of WHP programs, making them an important part of the Healthy People initiatives sponsored by the U.S. Department of Health and Human Services. Healthy People 2010 specifically recommended that the number of worksites with 50 or more employees offering nutrition and weight management services, increased from 55% to 75% (DHHS, 2000). And, the Healthy People 2020 objectives further that initiative by striving to “Promote the health and safety of people at work through prevention and early intervention” (Healthy People 2020 Objectives, 2011).

The Evolution of Worksite Health Promotion

Worksite health promotion programs became part of employee benefit programs in the mid-20th century (Chenoweth, 2007). Employee benefit programs began to take shape around the beginning of the 20th century as a way to attract, retain and keep employees healthy. Early employee benefit programs focused on retirement concerns (social security, pension and 401K plans), short- and long-term disability/income protection,

unemployment insurance, and health care. Today, with issues such as work/life balance and childcare, employee benefit programs have expanded, and evolved to address the needs of present day employees to include wellness. “Today’s employment-based benefit programs represent a national commitment to provide some measure of income security and access to certain services (especially medical care) to active workers, displaced and disabled workers, retirees, and their families” (Employee Benefits in the United States: An Introduction, 2011). Although many of these benefits are voluntarily offered to employees by business and industry (e.g., pensions and health insurance), the government provides businesses with significant tax incentives to offer such services and plans (Kelton, 2007). Typically, employer-provided benefits are tax-deductible to the employer and non-taxable to the employee (Employee Benefits and Research Institute, 2009).

Health care insurance is already and expected to remain one of the key aspects of employee benefit programs. Employees and those seeking a job consider this an important factor when in the job market (Dulebohn, Molloy, Pichler, & Murray, 2009). However, with the increase of health care costs for the reasons mentioned above, the costs to business and industry to provide these benefits have increased dramatically over the past several decades (Kenealy, 2011; Murphy, 2011). The costs are being shifted to employees through decreases in pay raises, co-pays, increased premiums and decreased benefits, and to consumers through increases in costs of products and services (Kelton, 2007; Health Care Crisis: Who is at Risk, 2012)

Fitness and recreation programs in the workplace date back to the early 1900s (Chenoweth, 2007). However, WHP programs as we know them today, began to evolve in the late 1950s (Chenoweth, 2007). Flagship programs surfaced in companies and

organizations such as PepsiCo, Sentry Insurance, Xerox, Rockwell International and NASA. Initially these programs were primarily recreation-oriented, in which employers provided recreation facilities such as a park or a swimming pool for employee use.

Worksite health promotion programs evolved to incorporate physical fitness and broader health promotion strategies, which included smoking cessation, weight loss and stress management. Through the 60s and 70s, research began to surface regarding the benefits of offering such programs (Chenoweth, 2007). Worksite Health Promotion gained momentum and popularity in the mid to late 70s and early 80s as a way to begin to address and manage escalating health care costs.

There are a number of business and economic advantages to employee wellness programs. Primarily, healthy employees are typically sick less often and therefore cost less to insure. In addition, healthy employees tend to be more productive, present, and attentive on the job (Cancelliere, Cassidy, Ammendolia, & Cote, 2011). Finally, these programs are also viewed as employee retention tools, as well as a way to attract the best employees (Berry, Mirabito, & Baun, 2010).

Worksite Wellness/Health Promotion Programs have been defined by Berry and associates (2010) as “an organized, employer sponsored program that is designed to support employees (and sometimes their families) as they adopt and sustain behaviors that reduce health risks, improve quality of life, enhance personal effectiveness and benefit the organizational bottom line” (Berry, Mirabito, & Baun, 2010, p. 106). A worksite wellness program can also be viewed as a program for employees designed to enrich their physical, mental, emotional and occupational well-being. This goal is consistent with the World Health Organization definition of health "A state of complete physical, mental and social

well-being, and not merely the absence of disease” (World Health Organization, 2011).

Comprehensive health promotion programs are designed to improve the health status of the population by addressing and integrating all these factors. To achieve this, WHP programs can integrate with Employee Assistance Programs (EAPs) and Occupational Safety Programs such as ergonomics and other OSHA supported efforts.

An comprehensive wellness program will include multiple health promotion strategies, such as health risk assessment (HRA), health education, online interventions, health screenings, health coaching, employee involvement in the design and promotion of programs, management and senior leadership support, dedicated staffing and resources, a culture of health, incentives and rewards and a program evaluation strategy (Underwood, 2011; Goetzel & Ozminkowski, 2008). By adopting a broader, multifaceted approach in the assessment and support of employee health, WHPs ensure that their programs will have a more profound and long-lasting impact on the well-being of participants (Merrill, Anderson, & Thygeson, 2011).

Health Promotion in the Workplace

The workplace as an access point for a large percentage of the population is a viable and opportune environment to make an impact on the health concerns of the population (Pronk, 2010). Most employed Americans spend on average 43 hours a week (8.3 hours per day) at work (American Time Use Survey, 2011). Because established vehicles of communication already exist, the workplace provides a valuable setting to promote health messages, provide education, and teach skills such as healthy eating behaviors, or how to better manage stress (Goetzel & Ozminkowski, 2008; Merrill, Anderson, & Thygeson, 2011). One study equated the worksite for adults as a site that operates similarly to schools

for children; “these populations spend a good percentage of their waking hours in these institutions and can be heavily influenced by their surroundings and the culture within” (Goetzel & Ozminkowski, 2008, p. 305). Worksites share in a common purpose and culture. They can offer support socially through co-workers, and administratively through management. Worksites have the capability to institute policies such as a no smoking policy that can favor behavior change and reinforce being healthy.

Additionally, worksites can leverage incentives to motivate program participation and increase the impact of healthy behaviors on the bottom-line. Employers also have a wide variety of tools at their disposal to reach the employee population both onsite and remotely. These could include an onsite fitness center or other facilities; vehicles such as newsletters, classes, lectures, health fairs and the web; motivators such as incentives, both financial and material, reduction in health insurance premiums, and impact on performance reviews (Pronk, 2010). Employers seeking to offer a more attractive program can reach beyond the employee to offer benefit programs to retirees and dependents, furthering the impact of the program.

The Important Role of HRAs

Health Risk Appraisals (HRAs) are recognized in the field of Health Promotion as a reliable method to influence and impact individual health changes and outcomes (Huskamp & Rosenthal, 2009; Pai, Hagen, Bender, Shoemaker, & Edington, 2009). Behaviors that can be changed or modified by the individual, including quitting smoking, increasing exercise, improving dietary habits and managing stress have shown a significant and measurable effect on individual health. The HRA, which identifies and computes risk based on these types of behaviors and health parameters such as blood pressure, weight

and family history, can provide valuable educational information tailored to an individual's risk conditions. Initially developed for use by physicians to communicate health risks to their patients, HRAs have been identified as a useful tool in other settings, including the worksite or corporate health promotion programs (Chapman, 2000). An HRA can act as a useful first step to educate and motivate employees toward behavior changes, as well as provide valuable data on any given population as a whole. Additionally, the HRA can be used to support program development, implementation and evaluation.

The Long-Term Benefits of Worksite Health Promotion

Despite the popularity of these programs, it is not entirely clear whether WHP programs have a significant and lasting impact on employee health and well-being. Critical to this issue is whether the use of and participation in an HRA actually results in life long behavior change for employees. Currently, research in these areas is limited. Although data exist to support potentially positive outcomes, more data needs to be collected, analyzed and presented in an unbiased and scholarly manner to continue to demonstrate and validate these results (Berry, Mirabito, & Baun, 2010; Goetzel & Ozminkowski, 2008; Pronk, 2010; Underwood, 2011). Just as important, very few programs are meticulously evaluated for effectiveness after their initial implementation (Berry, Mirabito, & Baun, 2010; Pronk, 2010). Because an extraordinary amount of time and money are spent on implementing WHP programs and making them accessible to employees, it makes sense to evaluate them and provide feedback as to how to improve the program and determine which features deliver the best results and why (Goetzel & Ozminkowski, 2008).

The University Worksite Setting

Currently, many of the existing WHP programs are situated in business and industry while a relatively smaller number can be found in university settings (Linnan, et al., 2010; Montgomery, 2008). Data collected in this setting have the potential to make a significant contribution to the current knowledge base. The University of Utah's relatively new worksite health promotion program as compared to an industry that started took shape in the mid 1970s. WellU was established in 2007 and serves approximately 15,000 benefit eligible employees and their families. Although the program receives broad institutional support and enjoys a high rate of participation among university faculty and staff (approximately 60%), it has never been evaluated, making it a natural fit to pursue an assessment/evaluation study of this program.

Program Planning

Creating a viable worksite health promotion program must include several planning, programming and design elements. The first features, which are critical requisites for success, are management support and participation (Della, et al., 2010). The next critical step towards properly designing a program includes a needs assessment; this facet of planning can help to define the current situation, identify actual needs and gives the program planners direction in goal setting, program planning and evaluation (Goetzel & Ozminkowski, 2008; Hodges & Videto, 2005; McKenzie, et al., 2009; Povasac & Carey, 2007). Ultimately, when properly designed, a WHP program is most likely to increase employee health and well-being while meeting the objectives of measurable decrease in health care costs and increase in productivity (Goetzel & Ozminkowski, 2008).

Data from a variety of sources can be helpful when developing a plan for worksite health promotion programs. The primary sources of information can be collected directly from the target population through HRAs, surveys, interviews and focus groups. Secondary sources of information include demographic statistics available through local and national government and nongovernmental agencies, such as the state department of health and the NIH. These resources can provide administrators with a large and more accurate picture of the health concerns of the target population and be especially useful in the development and management of WHP programs.

HRAs or appraisals have been widely used in the primary or direct health assessment of a population (McKenzie, et al., 2009; Povasac & Carey, 2007). In this case, the most useful resource for program planners is the aggregate or group report that summarizes the major health problems and risks of a given population. However, this self-reported data, can be affected by low response rates that could potentially skew the data set; respondents who are already in good health are most inclined to fill out the questionnaire and this may lead to an over representation of their responses in the data (Huskamp & Rosenthal, 2009). With a properly implemented distribution and promotion of the HRA (to be discussed later in this paper), most believe this data to be the best representation of the health of a given target population and a great starting point for any WHP program.

Study Aims and Objectives

Purpose of this Study

The purpose of this study is to evaluate the impact of the HRA and biometric screening results on the health risks and behaviors of participants in the WellU program as compared to nonparticipants. Participant outcomes will be evaluated based on self-reported

retrospective pretest and posttest data. The effectiveness of the HRAs in informing employees of their health concerns, motivating and facilitating behavior change will be investigated. These changes in behavior and health outcomes will be measured in the survey questionnaire.

One purpose of this evaluation will be to provide valuable feedback to Human Resources and program managers that may be used to improve program effectiveness. This study will also contribute to the body of knowledge on the effectiveness of worksite health promotion programs.

Research Questions

1. How did participation in the WellU program impact behavior change in this population? For example, did an employee quit smoking or lose weight as a result of the information provided in the HRA report? (Participation is defined as employees who completed the HRA and biometric screening and received a personalized report and tailored behavior change messages)

Ho: Participation in University of Utah's WellU program is not associated with any significant behavior change.

Ha: Employees of the University of Utah who participated in the WellU program and performed at least one significant behavior change (i.e. lost weight, started an exercise program, quit smoking).

2. How did increased awareness of health behaviors resulting in improved health status with participants in the WellU program as compared to non-enrolled employees?

Ho: Increased awareness of health behaviors did not result in improved health status of participants in the WellU program compared to those who did not participate in WellU.

Ha: Increased awareness of health behaviors resulted in improved health status of participants in the WellU program significantly more than for those who did not participate in WellU.

3. How did the \$40 per month discount on insurance premium incentive program influence employees to participate in the program?

Ho: The incentive to participate in this program is not associated with participation.

Ha: The incentive to participate in the WellU program is significantly associated with the level of participation.

4. How did participation in the WellU program affect the employee participation in WellU sponsored and community activities to improve their health?

Ho: There will be no significant difference in participation in activities to improve health status between participants in WellU and nonparticipants.

Ha: Participants in the WellU program, as compared to nonparticipants, were more likely to participate in weekly wellness activities and community sponsored events to improve health.

5. Is there a difference in health behaviors and outcomes between employees who have participated in WellU for all 5 years as compared to employees who have participated for 1 year?

Ho: There will be no significant difference in self-reported health behaviors, health status, BMI and stress levels between the employees who have participated in WellU for all 5 years as compared to those who have participated just 1 year.

Ha: There will be a significant difference in self-reported health behaviors, health status, BMI and stress levels between the employees who have participated in WellU for all 5 years as compared to those who have participated just 1 year.

Overview of This Study

The chronological flow of this study began with a meeting of the management stakeholders in the WellU program in December 2009. The time line was based on timing requested by stakeholders, which was to capture information during and after benefits open enrollment (April/May). Focus groups were conducted in April 2010 provided and provided and substantiated the questions and constructs that have contributed to the development and content of the survey.

Design

This retrospective program evaluation and survey study used an exploratory mixed methods research approach to answer the research questions, consisting of two phases: 1) qualitative focus groups and 2) a quantitative total sample online survey to all benefits eligible University of Utah employees, excluding hospitals and clinics.

Phase 1: Focus groups. Qualitative data feedback from the focus groups has been summarized and used to determine perceived behavior change, barriers and motivators of WellU participants and non-participants. The constructs established from these focus

group responses contributed to the survey design development and subject matter to match the research questions.

Phase 2: Research survey. A quasi-experimental recollection proxy pre- and posttest design (Campbell & Stanley, 1979) was used for the outcome evaluation to address the questions of improvements in health status and behaviors from when subjects began the program until taking the survey. Table 1.1 shows post-hoc statistical groups, constructed for comparison in the data analysis, which consisted of three major groups.

Participant Selection Criteria

Potential participants for the online survey included male and female benefit-eligible employees at the University of Utah excluding hospitals and clinics. There were 10,331 employees available for sampling within the current University of Utah employee database. To increase participation, a drawing was offered for prizes (an iPad, and gift certificates). To protect the confidentiality of the data, the participants were directed to a different web site at the end of the survey to register with their phone number and email address for further notification purposes in necessary. We stratified the total sample into research subgroups those who completed the HRA only, those who completed the HRA and pursued additional wellness activities and nonenrolled, for comparison on health behaviors and health status.

Table 1.1: Comparison Groups

	retro pretest	program	posttest
Participants HRA only	O1	X1	O2
Participant HRA plus wellness activities	O1	X1	O2
Non-participants (No Program Control)			O2

Additional outcome comparisons were conducted by looking at self-reported behavior change based on the participants' age, gender, pretest health status, and level of wellness activities. This allows for a quasi-experimental, two-group comparison *expo facto* design that controls for some threats to internal validity such as response shift bias (Creswell, 2009). By stratifying the sample, this strategy will help identify more specific demographic areas for improvements in recruitment and program implementation resulting in a more effective delivery of the WellU Program.

Introduction to Additional Chapters

Chapter 2 contains a Review of the Literature on studies relevant to this project. The rationale, history and impact of worksite health promotion programs to date, the elements of the most successful WHP programs, WHP programs in university settings, the use of incentives, motivation, barriers and return on investment (ROI) data will be discussed.

Chapter 3 reports on the first phase of this research project, the focus group analysis. This data reflects the motivations, barriers and effectiveness of the WellU program collected in a qualitative environment. This data sets the stage for the development of the survey to be reported on in Chapter 4.

Chapter 4 reports on the results of the survey and answers the research questions dealing with outcome and behavior change as a result of participation in the WellU program. It also shows the differences between two levels of participation, HRA only and HRA + wellness activities, and compares that group to non-enrolled employees.

Chapter 5 summarizes the results of this study and discusses the major findings and implications for the future.

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CHAPTER 2

SYSTEMATIC REVIEW OF THE LITERATURE

FOR SUBMISSION TO *AMERICAN JOURNAL OF HEALTH PROMOTION*

LITERATURE REVIEW OF CORE COMPONENTS OF SUCCESSFUL
WORKSITE HEALTH PROMOTION PROGRAMS WITH AN
EMPHASIS ON UNIVERSITY-BASED PROGRAMS

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Abstract

Healthcare costs in the United States have risen 10 fold in the past two decades, now accounting for 17.9% of our nation's Gross Domestic Product (GDP) (U.S. Health Care Costs, 2012). Coinciding with this increase, employer-sponsored health insurance premiums are increasing at rates twice that of inflation (Hunnicuttt & Jahn, 2011). In an effort to slow the growth of employer and employee health insurance and medical care costs, many employers have begun worksite health promotion (WHP) programs. These programs, representing a proactive approach to preventing health problems, are aimed at improving employees' health, productivity, and morale, while reducing absences and decreasing healthcare costs.

This article will provide a comprehensive review of worksite health promotion programs looking at the impact of escalating healthcare costs to business and industry, the core components of a successful evidence-based WHP program, the use of Health Risk Appraisals (HRAs) as a vehicle for increasing employee awareness as well as a program planning tool; the pros and cons of incentives, and a discussion of return on investment results. While many worksite wellness programs have been implemented in the last several years, very few have been evaluated in a university setting. This review summarizes the literature that reports on the outcomes of university-based programs and identifies the need for more research.

Background and Introduction

The History of Worksite Health Promotion Program

Fitness and recreation programs in the workplace date back to the early 1900s. However, programs as we know them today began to evolve in the late 1950s (Chenoweth, 2007). Initially these programs were primarily recreation-oriented; employers provided recreation facilities such as a park or a swimming pool for employee use. Worksite health promotion programs evolved to incorporate physical fitness and broader health promotion strategies, including smoking cessation, weight loss and stress management. Flagship programs surfaced in companies and organizations such as PepsiCo, Sentry Insurance, Xerox, Rockwell International and NASA. Throughout the 60s and 70s, research began to surface regarding the benefits of offering such programs (Chenoweth, 2007). Worksite Health Promotion (WHP) gained momentum and popularity in the mid to late 70s and early 80s as a way to address and manage escalating healthcare costs as well as improve employee productivity and retention.

Worksite Wellness/Health Promotion Programs have been defined by Berry (2010) as “an organized, employer sponsored program that is designed to support employees (and sometimes their families) as they adopt and sustain behaviors that reduce health risks, improve quality of life, enhance personal effectiveness and benefit the organizational bottom line” (p. 106). A worksite wellness program can also be viewed as a program for employees, designed to enrich their physical, mental, emotional, and occupational well-being. Comprehensive health promotion programs are designed to improve the health status of the population by addressing and integrating all these factors. To achieve this, WHP programs can integrate with Employee Assistance Programs (EAPs) and

Occupational Safety Programs (such as ergonomics and other OSHA supported efforts). An integrated comprehensive wellness program will include multiple health promotion strategies (e.g., health risk assessment, health education, online interventions, health screenings, and health coaching); employee involvement in the design and promotion of programs; management and senior leadership support; dedicated staffing and resources; a culture of health; incentives and rewards; and a program evaluation strategy (Goetzel & Ozminkowski, 2008; Underwood, 2011). By adopting a broader, multifaceted approach in the assessment and support of employee health, WHP programs ensure that their efforts will have a more profound and long-lasting impact on the well-being of participants.

Rising Health Care Costs and the Role of the Workplace

Healthcare costs continue to rise at a rate of over 7% a year in the past 4 years alone (Kenealy, 2011; Mayne, Girod, & Weltz, 2011). One report conducted by the Kaiser Family Foundation and Health Research and Educational Trust (Kaiser Family Foundation, 2012) found an increase of 8% to 9% in 2011 and a 10-year increase of 113% in employer-paid premiums and a corresponding increase of 131% in employee contributions. So, not only are employers experiencing dramatic increases in healthcare costs, but so are the employees who will pay on average between \$4100 - \$5300 in premiums per family (depending on the plan) even before paying for any out-of-pocket medical care.

Overall, the expenditures on healthcare in the U.S. are predicted to reach \$4.2 trillion (20% of GDP) by 2016, just 4 years from now (Hunnicuttt & Jahn, 2011). Employer's burden to provide health benefits has had a direct impact on business profits, shouldering increases from 18% in 1965 to 40% in 2006 (Chenoweth, 2007). The U.S. workforce is approximately 131 million strong with employer-sponsored healthcare, covering

approximately 150 million, nonelderly people (McMahon, 2012). Since this cost to business and industry can be significant, it may provide motivation to promote healthy behaviors among employees.

Most employed Americans spend on average of 43 hours a week (8.3 hours per day) at work (American Time Use Survey, 2011). Because established vehicles of communication already exist, the workplace provides a valuable setting to promote health messages, provide education, and teach skills such as healthy eating behaviors, or how to better manage stress (Goetzel & Ozminkowski, 2008; Merrill, Anderson, & Thygeson, 2011). Worksites share in a common purpose and culture. They can offer support socially through co-workers, and administratively through management. Worksites have the capability to institute policies (such as a no smoking policy) that can favor behavior change and reinforce being healthy. Additionally, worksites can leverage incentives to motivate program participation and increase the impact of healthy behaviors on the bottom line.

Disease Prevention

The most prevalent diseases affecting Americans are largely preventable and directly attributable to behavioral and lifestyle choices, such as diet and activity levels (CDC Data Stats, 2011; Schoenborn & Adams, 2010). Nutrition has become especially important since Americans consume more fast, cheap and processed foods (Fishbein, 2001). Exercise levels and movement habits in the U.S. have also decreased (Chenoweth, 2007; Pronk, 2010). Childhood obesity has tripled in the past 30 years. Overweight and obese children become overweight teenagers and often overweight adults. At our current rate it is predicted that if these trends continue, by 2030, 86.3% of adults will be overweight or obese; and 51.1%, obese (Wang, May, Liang, Caballero, & Kumanyika, 2008)

Obesity is identified by the CDC as a major risk factor for other chronic health conditions such as diabetes, heart disease, and stroke. Lack of physical activity, poor dietary habits, tobacco use and excessive alcohol consumption are to blame for many of these chronic conditions. Chronic diseases affect one out of every two adults in the U.S. and are the leading causes of death and disability (Chronic Disease and Health Promotion, 2010). Modifiable health behaviors cause many of these diseases, and programs to educate and teach the skills necessary to reduce health risks are what drive the impact of work site health promotion programs.

WHP programs are a core strategy to prevent disease as evidenced by the efforts put forth in the National Prevention Strategy; workplaces are key “partners in prevention” (National Prevention, 2011). Additionally, the United States Department of Health and Human Services has recognized the value of WHP programs, making them an important part of the Healthy People Initiatives. Healthy People 2010 specifically recommended that the number of worksites with 50 or more employees, offering nutrition and weight management services, increased from 55% to 75% and the Healthy People 2020 objectives further that initiative by striving to “Promote the health and safety of people at work through prevention and early intervention” (Healthy People 2020 Objectives, 2011).

Elements of a Successful Worksite Health Promotion Program

Several studies have explored the “best practices” of worksite health promotion programs and how managers can implement efficacious programming (Berry et al., 2010; Goetzel & Ozminkowski, 2008; Holbrooke, 2011; Hunnicutt & Leffelman, 2006; Pronk, 2010). Organizations such as Wellness Councils of America WELCOA, The Health Enhancement Research Organization (HERO) and the CDC put forth guidelines and

criteria to assist businesses in conceptualizing, planning and implementing WHP Programs (CDC Healthier Workplaces Initiatives; HERO Best Practice Scorecard; Hunnicutt & Leffelman, 2006). Additionally, organizations such as the NIH and The Partnership for Prevention have contributed to the body of knowledge that assists business and industry in developing the most effective programs for their company (Business in Health, 2012; NIH Home Page, 2012). Together these efforts have laid out a template for successful WHP programs. To be effective, WHP programs should strive to meet and follow certain core criteria in order to fulfill the evolving needs of both the company and the employees. These core guidelines help to insure that the program is set up to meet the goals of their organization.

With the exception of a few outliers, the overlapping themes and goals for creating a successful WHP program are synthesized in the list below. These themes stem from the guidelines, pillars of success, benchmarks and components of successful programs that have produced the greatest returns on investment. Together these efforts have laid out a template for successful WHP programs.

The core components of an effective Worksite Health Promotion program can be summarized as follows:

- 1) establish a business case for the program specific to that company
- 2) have management support at all levels
- 3) assess the needs of the population and provide quality, relevant programs that address those needs
- 4) have a comprehensive plan that addresses the business case
- 5) establish, align and integrate the WHP program into the corporate culture

- 6) use a variety of methods to communicate effectively with employees
- 7) be accessible/convenient
- 8) individualize programs and services as much as possible
- 9) create partnerships within the organization and community
- 10) measure and evaluate effectiveness regularly

When considering the implementation of a WHP program, program planners should ask these critical questions:

- 1) Is there a business case established for the worksite health promotion program?
- 2) Are the needs of the employees understood and being met?
- 3) How was this determined, through needs assessment, or HRA?
- 4) Have expected outcomes been identified, such as measurable healthcare cost reduction, health behavior change, increased productivity, decreased absenteeism, or reduction in employee turnover (Chenoweth, 2007; Pronk, 2010)?

Business Case

The business case is referred to as an economic analysis or a “scenario in which an organization realizes a positive return on investment for a particular intervention or program” (Pronk, 2010, p. 41). A business case is driven by the needs assessment and desired changes that senior management wishes to see as a result of the program (Chenoweth, 2007). Elements of a successful business case result from the development of a program that fits within the needs of that organization, and its present issues and concerns.

Management Support

Management support at all levels equals multilevel leadership and includes both participation and support from the top levels of management through middle management to the employee level (Berry, Mirabito, & Baun, 2010; Della, et al., 2010; Goetzel & Ozminkowski, 2008). When the Chief Executive Officer (CEO) sets a positive example by taking part in programs, using the fitness center, and encouraging his/her staff to do so as well, it is an important endorsement of the WHP program. The CEO should *walk the talk* as they say in corporate lingo. Middle managers must also demonstrate a commitment to the wellness program by participating themselves as well as encouraging participation. Mid-level management can create incentive activities and flexible plans that encourage activity time around lunch breaks, when employees might choose to exercise or take part in other WHP program activities.

Needs Assessment

WHP programs are incomplete without a thorough assessment of the needs of the population to be served. Program planning, driven by the identified needs, should determine the types of classes, educational programs, communication and messages, activities and interventions provided by the program. In essence, the needs assessment creates a framework for the program plan.

Needs assessment can also help determine the highest impact incentives. Although the use of extrinsically motivating incentives is controversial, they have been shown to sharply increase participation at the outset of a program (Robroek, van Lenthe, van Empelen, & Burdorf, 2009). Companies must avoid appearing manipulative in the use of incentives (Seaverson, Grossmeier, Miller, & Anderson, 2009).

Supportive Corporate Culture

The state-of-the-art health promotion program must expand beyond the walls of a fitness center and permeate the entire culture of the organization. Program managers should understand what drives the corporate culture and consciously integrate and align the program plan with this culture. A healthy workplace culture also includes having company policies and a supportive corporate environment that allow for and reinforce participation in the health promotion program. In addition to the physical environment, a psychologically supportive environment is needed (or should be created) that allows employees to express opinions, ideas, give and receive feedback in a non-judgmental manner, and feel comfortable, safe and supported at work (Chenoweth, 2007; Goetzel & Ozminkowski, 2008). Effective alignment must also take into account how programs are planned and implemented, keeping in mind the health literacy of employees, their cultural receptivity, and the need for privacy and confidentiality.

Provide Quality, Relevant Programs

In order to expand offerings beyond traditional choices, Pronk (2010) stresses the use of proven, evidenced-based programs when developing an overall programming strategy, as well as maintaining a high level of quality assurance by seeking out accredited health and wellness vendors, and generating program outcome reports on a regular basis (Pronk, 2010). These efforts help support the business case and demonstrate to employers that programs are producing measurable and valuable results (Ryan & Deci, 2011). Additionally, program managers and planners should monitor and evaluate their programs regularly, especially those provided by outside service providers (Goetzel & Ozminkowski, 2008). Fun and enjoyment can play an important role in program

participation and adherence; employees (and people in general) respond more positively to a program that is fun and has a degree of intrinsic motivation behind it (Goetzel & Ozminkowski, 2008).

Create Partnerships within the Organization and Community

Programs that integrate with related HR functions to include Employee Assistance Programs, workers compensation and occupational health programs, and benefits administration can have value, especially in facilitating work-life balance and addressing other personal concerns that can affect employee health and well-being (Baun, et al., 2010). Integrating WHP programs with the corporate culture should include the alignment of like-minded services within the corporate setting to provide programs that promote healthy outcomes in the workplace. These integrated approaches can also include workplace cafeterias that provide healthy food options or the creation of in-house medical departments to provide WHP services.

Effective Communications

Communication is a key element to any successful program. Messages, tailored for target audiences or distributed en masse to the employee population, can promote the WHP program generally, or be tailored for specific activities or well-being issues. Driven by the CEO, mid- and upper-level managers and the WHP program manager, these messages can be delivered via electronic newsletters, flyers, post-cards, mobile health, smart phones with free apps and through fun, inexpensive promotional materials, such as desk top reminders, like mugs or t-shirts. Whatever shape these strategies take, communication must be accurate, informative, ongoing and supportive of participants in order to be successful in promoting behavior change (Goetzel & Ozminkowski, 2008; Seaverson, et al., 2009).

Tailoring and customizing the communications to the end user can be more easily achieved today with the use of social media and networks. These tools can also play an integral role in communicating health messages, as well as being an effective trigger toward successful behavior change (Abshire, 2009; Fogg, 2009). For example, Cowdery (2002) and colleagues reported that participants who received tailored feedback demonstrated significant improvement in compliance and behavior change (Cowdery, Konkel, & Wildenhaus, 2002). The combination of an HRA followed by tailored messages to help individuals better understand their health status and then coach them to develop strategies for achieving change have been shown to be an effective practice in WHP.

Accessibility and Convenience

The accessibility and convenience of WHP programs matter to the employee (Berry, et al., 2010; Goetzel & Ozminkowski, 2008; Holbrooke, 2010). The onsite facility is desirable, however it is not affordable for some companies and programs can be organized without a fitness center. Health screenings, classes and noontime lectures can take place in conference rooms. Walking programs can be offered outside or in stairwells, and office stretch programs can be offered at the workstation. Some WHP program managers may choose to coordinate and partner with conveniently located community based facilities and arrange for discounted employee memberships.

Individualize Programs and Services

Programs should focus on individual participants, since one program will not meet everyone's needs. HRAs, which identify individual health risks, can provide a great opportunity to address individual concerns by using tailored health behavior change

messages to the individual (Cowdery, 2002; Faghri, Gustavesen, & Kotejoshyer, 2008). This specific feedback can be followed by offering individualized health coaching, as needed or requested by the employee (Chapman, Lesch, & Papas-Baun, 2007). Behaviors and the programs implemented to help facilitate behavior change vary widely from implementing an exercise program to a quit-smoking program. Nevertheless, successful programs all employ the common notions of identifying and supporting readiness to change by providing training and skills to develop self-efficacy, reinforcing positive behaviors through improving the worksite social and cultural environment and driving towards intrinsic motivation (Berry, et al., 2010; Goetzel & Ozminkowski, 2008; Pronk, 2010).

Measure and Evaluate Regularly

Measurement and evaluation of programs and activities should be conducted regularly (Chenoweth, 2002). Some employers do not see the value gained by investing funds in evaluating the outcomes of their WHP programs. For many years, employers assumed there were positive outcomes. To be considered successful, a worksite health promotion program must be based on more than do-good efforts. A company's commitment to help mitigate the health risks of their employees and lower healthcare costs of their company should be measured. It is important to show that the program is meeting the needs of the employee population being served as well as demonstrating a return on investment and support for the business case (Pronk, 2010).

The quality of the evaluation of WHP programs has improved in recent years to include more randomized control trials (RCT's), longitudinal perspectives and retrospective studies (Hyatt-Neville, Merrill, & Kumpher, 2010). These studies reinforce more

conclusively, the long-term results of WHP programs such as continued ROI and improved employee health.

Health Promotion in the University Setting

University settings can be ideal environments for developing effective WHP programs because of their vast health-related resources, dynamic health research disciplines, and large and diverse employee populations. Universities often have greater resources for developing WHP programs than businesses and private industries, such as existing fitness facilities and wellness programs. University and college campuses, which are more akin to small communities with employees ranging from service workers to senior level faculty and administrators, also differ from traditional worksites.

In Montgomery's (2008) dissertation entitled *Building Wellness through the Implementation of Exercise, Nutrition and Chronic Health Education*, the literature review identified best practices for university-based health and wellness programs. Montgomery (2008) reviewed 18 programs finding a variety of structured and nonstructured programs. The analysis revealed that the structured programs had the greatest impact in improving overall employee health. Despite these 18 programs being implemented in research-intensive universities (where effectiveness was more likely to be appreciated as a measurable goal), 12 had not been formally evaluated, and no statistical outcome evaluation data was available. The information provided in the dissertation was gathered through interviews or reports. Only six had been evaluated, and those outcomes were reported in journal articles. Of these six journal articles, only two reported on a purposeful, time bound study (Montgomery, 2008). A Midwestern university conducted a 12-week program with pre- and posttest data to measure changes in biometric parameters such as

weight, BMI, cholesterol and blood pressure. Researchers at Slippery Rock University conducted a 16-week intervention study to determine the effects of knowledge and the interventions on similar biometric parameters (Montgomery, 2008). Both studies showed significant improvements in lower weight, BMI, decreased hypertension, and blood cholesterol. The other four university programs used either a retrospective pretest/posttest survey design, or the reports that simply identified participation rates and results reporting outcomes of improved biometrics, as well as increased exercise, and decreased tobacco and alcohol use that were also noted by researchers (Montgomery, 2008).

If other universities and colleges are currently offering wellness programs to their employees, their outcomes are not being reported in the literature research or practice (Linnan et al., 2010). Most of the articles that report on university-based WHP programs cite outcomes from commercially based worksite wellness programs. This further reinforces the need for studies that reports directly on the effectiveness of college and university based WHP programs. In a project researching community colleges as settings for promoting employee health, Linnan and associates (2010), confirm this gap in the literature and further state that the papers reviewed lacked rigorous program evaluations or provided no results from interventions (Linnan, et al., 2010). They surveyed 59 community college campuses of which 48 responded, and 13 of those 48 (27%) reported having some sort of structured wellness program for employees. That group was made up predominantly of urban institutions that had larger employee populations. Linnan and associates (2010) concluded that the main components of a successful WHP program were a supportive environment, onsite physical activity resources, healthy food options and a committee or staff dedicated to the success of the program. Additionally, the authors note that another

success factor in a university setting is the presence of a health and fitness-related academic degree program. This study did not evaluate the health or cost results of the 13 programs; therefore, no outcome data were reported.

To date, there have been few published articles or evaluations with data to explain why participants enroll and attend a university-based WHP programs, as well as their perceived barriers and motivators for participation (Ball, 2009; Barker & Glass, 1990; Eckhart, Ebro, & Claypool, 1988). Although few of the university-based programs reported on incentives used to motivate or stimulate participation, based on evaluations of commercial and private WHPs, one could surmise that the most popular incentives in those programs (such as paid time to work-out and monetary rewards) also would work in university environments.

Incentives

Participation in any or all aspects of the WHP program is the primary key to success for the desired outcomes and incentivizing participation is a universal tool to achieve enrollment and involvement. Indeed, it is estimated that well over 70% of WHP programs use some sort of incentive system to increase employee enrollment and participation, a recommended component of successful WHP programs (Anderson, Grossmeier, Seaverson, & Synder, 2008; Kruger, Yore, Bauer, & Kohl, 2007). Incentives can take many shapes (e.g., financial incentives, paid time off work, material rewards such as t-shirts, gym bags and gift cards), but most researchers believe that financial incentives are the most effective (Anderson et al., 2008; Hyatt-Neville, Merrill, & Kumpher, 2010). Accessibility of facilities, ability to include family members, supportive work environment, encouragement from management and coworkers are also considered

incentives to participation that remove several of the barriers that typically get in the way of participation (Kruger, et al., 2007).

The right incentives with the right timing can be instrumental to the value of an incentive program. Hyatt-Neville (2009) found that having more immediate gratification in cash awards as well as diversifying (with benefits integrated cash and goods) the incentive program could increase its success (Hyatt-Neville, 2009).

Benefits Integrated Incentives

Of the incentive programs structured to encourage and increase enrollment, benefits integrated incentives account for approximately 48% of the incentives offered in WHP programs (Incentive Driven Health Care, 2012). Typically, this kind of incentive is tied to HRA participation and the use of incentives is shown to be positively associated with program enrollment and participation rates in an HRA (Seaverson, et al., 2009). Benefits integrated incentives tend to allow the employer to offer a greater cash value at a lower cost to the organization, and usually involve monthly or annual premium reductions, a richer health plan, or payments into a health savings or flexible spending account (Anderson, et al., 2008). Companies that provide this type of incentive program can offer a much higher value, on average \$131 higher than companies that do not offer this option (Anderson, et al., 2008; Seaverson, et al., 2009). When this strategy is employed, cost balancing within the overall benefits strategy by offsetting the incentive cost with employee contributions, can enable the employer to offer generous incentives with little impact to the employer's health budget. And, though calculated participation rates of 65% at an incentive level of \$200 may initially seem prohibitive; these amounts can be gradually added to the premium rates being charged to employees. This increase in

premiums, with the subsequent reduction in premiums for participation, creates additional motivation for employees to participate. Employers typically work with their 3rd party provider to set premium contributions each year so increases in these contributions are often expected by the employees (Anderson, et al., 2008).

The Use of HRAs in Worksite Health Promotion

Health Risk Appraisals (HRAs) are an instrumental part of many Worksite Health Promotion (WHP) Programs (Burton, Chen, Conti, Shultz, & Edington, 2006; Health Risk Appraisals, 2010;). HRAs are used as a method of making individuals aware of health behaviors, most importantly those behaviors that, if not mitigated, could result in significant morbidity or mortality (Huskamp & Rosenthal, 2009). The worksite is an ideal place to use HRAs because it provides a basis on which a wellness program can be designed and delivered in a more targeted and effective way. Most HRA vendors have the capacity to provide aggregate pre and post data that could help in evaluating the effectiveness of interventions offered at the worksite.

Although HRAs have been widely used in worksite wellness programs, their impact on health behavior change and related health indicators, such as cholesterol and body composition is not widely known or understood (CDC, 2007). In 2007, the CDC Community Guide to Preventive Services branch of the National Center for Health Marketing (NCHM) at the Centers for Disease Control and Prevention (CDC) conducted a thorough review of the literature identifying how to best use HRAs in the workplace. Findings support prior literature that HRAs, used in conjunction with a comprehensive health promotion and education program, yield the best results.

Return on Investment

As previously discussed, program evaluation is one of the key benchmarks of successful WHP programs. This evaluation can take many shapes; however, most companies are interested in the financial benefits gained from offering such a program. These returns on investment (ROI) figures are often measured in reduced absenteeism, increased productivity, decreased healthcare expenditures, and decreased Workers' Compensation claims and disability. WELCOA has produced a report that identifies how the unhealthy lifestyles of employees, combined with increasing healthcare costs have impacted the bottom line of most American businesses (Hunnicuttt & Jahn, 2011). Several employers have attempted to measure these outcomes, and despite the inconsistencies in evaluation tools and difficulties capturing exact cause and effect relationships between the WHP program and positive health outcomes, most data has shown ROI savings in healthcare costs ranging from \$1.40 per dollar spent to \$3.14, with a mean of around \$3.00 (Goetzel & Ozminkowski, 2008; Mitchell, Goetzel, & Ozminkowski, 2008). One meta-analysis of studies conducted by Aldana (2001), which reviewed 32 studies in 2001, showed a ROI of \$3.48 (Aldana, 2001). Chapman, in his meta-analysis of 56 studies on the economic impact of WHP programs, found 28 of those studies focused on healthcare costs making it the most prevalent concern for businesses, and the most common rationale for providing WHP programs (Chapman, 2005). Looking at frequency and cost of prescription drugs and medical claims, Merrill, Hyatt, Aldana and Kinnersley (2011) found, after 5 years, a cost savings of \$3.85 for every dollar spent on the program (Merrill, Hyatt, Aldana, & Kinnersley, 2011).

A decrease in sick leave is the second-most prevalent economic variable and concern to employers when measuring the value of worksite health promotion programs (Chapman, 2005). Reductions in absenteeism were also measured by Aldana (2001), and in the 14 studies he reviewed, reduction in employee absenteeism was found. However, the dollar figures these reductions measure can be inexact as they represent a huge range of salaries (Aldana, 2001).

Chapman's research (2005) identified the 10 highest-scoring companies (in terms of ROI) and then isolated those elements most common in these successful programs. The elements included the use of theoretical models as the basis for behavior change; the availability of Internet based health information, more individualized programming and information (tailoring, high-risk intervention coaching, self-directed change, and HRAs) (Chapman, 2005). Nine of these 10 studies took place in the past decade, indicating newer prevention technologies are producing greater returns on investment. Instead of the typical 1:3 cost benefit ratio, newer programs are reporting a ROI as high as 1:6. Chapman's conclusions show strong evidence that reduction in absenteeism, healthcare costs, Workers Compensation claims and disability are slightly more than 25% in companies with successful (i.e., high ROI) WHP programs.

Chapman expanded his meta-evaluation in 2012 adding 10 new studies to the existing 56 previously analyzed in 2005, and dropping 4 weaker studies resulting in a total of 62 studies in the evaluation (Chapman, 2012). The inclusion criteria stayed the same to include multi component programming, workplace setting only, rigorous study design, original research, adequate sample size, quality of measures used, replicability of interventions, length of observational period and experimental time period. Overall,

reported reductions in health plan costs, sick leave, workers compensation and disability costs of around 25% with cost/benefit ratios ranging from \$1.65 to \$19.41 per dollar spent were found. Some of the studies looked at only one economic variable and others looked at all three. Chapman found, based on the published results, that worksite health promotion programs “represent one of the most effective strategies for reducing medical costs and absenteeism” (Chapman, 2012, p. 9). He also states that because the average age of American workers is increasing, these programs will be even more important in keeping workers healthy and productive throughout their work life.

The Value of ROI Studies

Some employers believe that successfully realizing ROI from a WHP program takes several years (Anderson, et al., 2008), others contest the validity of those studies that have proclaimed significant results citing bias, because they were performed by in-house managers or vendors with a vested interest in the success of their programs (Spero, 2011). Employers relying on ROI data to justify starting or investing in a WHP program may not trust others’ results because of bias or lack of experimental rigor. Although these concerns could make the ROI data suspect, the continued demonstration of positive returns on investment combined with the overwhelming amount of increased employee morale, retention and overall health and well-being makes the logic of providing employee wellness programs a good business decision.

Health Risks and Productivity

Burton and associates (2006) looked at the effects of 10 of the major health risk factors as typically measured in an HRA, and associated the presence of these risk factors with

decreases in job productivity, finding a significant relationship (Burton, et al., 2006).

Overall poor health and stress showed the highest degree of correlation. As the number of health risk factors increased, so did the level of lost productivity and work limitations, with high-risk employees (five or more risk factors) being significantly less productive than low-risk individuals (zero - two risk factors). Overall as a risk factor either increased or reduced, there was a corresponding change in productivity over time, which was estimated to be valued at \$950 per year per risk changed (Burton, et al., 2006).

Baker and associates, (2008) found that after implementing an ROI-based obesity management intervention, which included coaching, print materials and web-based tracking, seven out of 10 health risks decreased. The total projected savings realized from this program (\$311,755) were attributable to reduced healthcare expenditures (59%) and increased productivity (41%). The overall ROI realized from this effort was 1:1.7 (Baker, Goetzl, Pei, Weiss, Bowen, Tabrizi, Nelson, Metz, Pelletier & Thompson, 2008).

Serxner and associates (2001) also studied the influence of health risks on absenteeism and found significant relationships between 8 out of 10 of the health risks reviewed (Serxner, Gold, & Bultman, 2001). These risk factors included exercise, back care, diet, driving safety, mental health, smoking/tobacco use, stress and weight. The most significant risk factors identified were stress, mental health and back issues, and a positive change in any of these three risk factors significantly reduced absenteeism.

Effective programming in worksite health promotion typically includes modules that address many of these issues and can translate into reduced employee risks and lower absenteeism. Edington and associates (1997) looked at personal health practices and their association with medical claims, and showed that as overall health risk increased or

decreased, so did medical claims (Edington, Yen, & Witting, 1997). This finding lends validity to the importance not only of helping high-risk employees lower their health risks, but to helping low risk employees maintain their healthy behaviors.

Productivity and Presenteeism

For some employers, productivity is the target area that is most important in determining the success of their WHP program. In their paper for the *Harvard Business Review*, Berry, Mirabeto and Baun (2010) discussed a study conducted in 2009 by Ronald Loeppke in which he demonstrated that lost productivity can have a 2.3 times greater effect on the bottom line than medical and pharmacy costs (Berry et al., 2010; Loeppke, Taitel, Haufle, Parry, Kessler, & Jinnett, 2009). Another study conducted at Dow Chemical placed per employee dollar figures on presenteeism at \$6,721 compared to medical claims which were valued at \$2,278 and absenteeism valued at \$661. “Presenteeism is often measured as the costs associated with reduced work output, errors on the job, and failure to meet company production standards” (Schultz & Edington, 2007, p. 548). These data further reinforce that healthcare costs alone are not the most important value of a worksite health promotion program. Multiple chronic health conditions have been shown to have the most significant association with behavioral impact and overall employee performance (Brooks, Hagen, Sathyanarayanan, Schultz, & Edington, 2010).

The Additional Value of WHP Programs

There is more to return on investment than the monetary gain that employers may reap from reduced healthcare costs or absenteeism. Several companies who implement WHP programs do so because it is obvious that a fit and healthy employee will feel better and be

more present at work. Improved company morale, and employee retention and loyalty have also been identified as rationale for employee health, fitness and well-being efforts in the workplace (Berry, et al., 2010). Because better health translates into better sleep habits and improved energy levels, WHP programs can have a measurable impact on employee productivity. Ultimately, better health translates into a better quality of life.

A more recent study looking at work-life benefits and the impact on organizational behaviors found that providing work-life benefits to include employee wellness programs sends the message of caring for the employee's well-being which translates into improved work performance and greater commitment to the employer (Muse, Harris, Giles, & Feild, 2008). The caveat with this study however is the employee must value the benefits provided as relevant to their needs, hence reinforcing the importance of needs assessment. A meta-analysis of studies looking at absenteeism and job satisfaction found a moderate association between participation in a company's worksite wellness program and higher levels of job satisfaction further supporting the softer value of offering these programs (Parks & Steelman, 2008).

In conclusion, data focused on healthcare costs, claims and absenteeism are most prevalent, and research that targets the softer side benefits of health promotion programs in the workplace are less available. More research is necessary to assess this important outcome of WHP programs.

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CHAPTER 3

A FOCUS GROUP ANALYSIS TO DETERMINE THE EFFECTIVENESS, MOTIVATIONS AND BARRIERS TO A UNIVERSITY-BASED WORKSITE WELLNESS PROGRAM

FOR SUBMISSION TO *AMERICAN JOURNAL OF HEALTH PROMOTION*

A FOCUS GROUP ANALYSIS TO DETERMINE THE EFFECTIVENESS,
MOTIVATIONS AND BARRIERS TO A UNIVERSITY-BASED WORKSITE
WELLNESS PROGRAM

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Keywords: worksite health promotion, health incentives, Health Risk Assessment, motivation and barriers; manuscript format: research, process evaluation, program evaluation; research design: retrospective pre-test post-test; focus groups; qualitative: Setting: University, health focus, behavior change: Strategy: incentives: Target Population: adults, employees

Abstract

The purpose of this study is to determine the effectiveness of a university-based Worksite Health Promotion (WHP) program including a Health Risk Appraisal (HRA) and biometric screening of employees' behavior changes and health status at a large western university.

This evaluation research involved conducting focus groups with a convenience sample of 27 enrolled and nonenrolled employees to gather qualitative data on motivations and barriers to program enrollment and perceived health benefits/outcomes.

Four 90-minute focus groups were grouped by employee classification within the university system (i.e., faculty/participants; faculty/nonparticipants; staff/participants; staff/nonparticipants) and conducted in a 2-week time frame. Groups were facilitated by investigators not associated with the wellness program and were digitally recorded. Transcripts and recordings were reviewed and coded for themes to determine conclusions about the efficacy of the university-based employee wellness program.

The results of the focus groups suggested that even though the participation levels in the program were high, with approximately two thirds of the employee base enrolled, there was a lack of clear communication to enrollees concerning WHP benefits and services that resulted in employees not taking full advantage of follow-up services and supplemental programs.

Introduction

The most prevalent diseases (e.g., heart disease, cancer) are largely preventable and directly attributable to behavioral and lifestyle choices (Schoenborn & Adams, 2010). Evidence-based programs, which help to educate, teach skills and offer support toward

eliminating unhealthy behaviors, could have a major impact on the overall health of individuals in the United States. Despite spending the most on healthcare, at present the U.S. ranks 36th in life expectancy and 37th in health outcomes in the world, (List of Countries by Life Expectancy, 2012; Murray, Phil, & Frenk, 2010). A focus on prevention is needed in addition to a reform of the current healthcare system. “While aiming to provide solutions to the problems of incomplete insurance coverage and inefficiency of care delivery, healthcare reformers have given insufficient attention to the design, funding, and evaluation of interventions that are tailored to local realities and address preventable causes of death” (Murray, et al., 2010, p. 99)

In 2010, the Affordable Care Act established a prevention council comprised of 17 interdisciplinary health professionals who will be charged with prevention and health promotion in order to “prioritize prevention by integrating recommendations and actions across multiple settings to improve health and save lives” (National Prevention, 2011, p. 7). The emphasis put on prevention by healthcare reform is intended bring the attention required to increase health promotion and education services availability to US citizens.

Study Purpose

The purpose of this study is to conduct a process and outcome evaluation of the University of Utah’s worksite health promotion program, WellU, to determine the program effectiveness and the effectiveness of the Health Risk Appraisal in facilitating improved health behaviors among university employees. In addition, this research will seek to determine the factors that motivate current benefits eligible university employees to participate in the WellU Program, and determine the barriers that benefits eligible University employees use as rationale for not participating in the WellU Program. A long-

term objective will be to provide valuable feedback to both the human resources department and program managers toward improving program efficacy.

Healthcare Cost and the Role of the Workplace

Healthcare costs have continued to rise at a rate of over 7% a year in the past 4 years alone (Kenealy, 2011; Mayne, Girod, & Weltz, 2011) and are an area of critical concern. Employers share in the burden of these increases, and the cost to business and industry can be significant. This creates added motivation for employers to facilitate, encourage and foster healthy behaviors among their employees. Most employed Americans spend on average, 43 hours a week at work, making the workplace an ideal site for conveying important health messages, knowledge, and skills to the population at large (American Time Use Survey, 2011). Just as schools impact the overall growth and development of children, worksite culture and surroundings have a significant influence on the behaviors of adults (Goetzel & Ozminkowski, 2008).

Health Promotion Solutions

Worksite health promotion (WHP) programs are becoming a core strategy to prevent disease as evidenced by the efforts put forth in the National Prevention Strategy, which states that workplaces are key “partners in prevention” (Council, 2011, p. 9). Employers view WHP programs as a means to improve their employee’s health and wellbeing, thereby increasing employee productivity and morale, decreasing employee absenteeism, and lowering overall healthcare costs (Chapman, 2005; Harden, Peersman, Oliver, Mautherner, & Oakley, 1999; Pronk, 2009). Additionally, the United States Department of Health and Human Services has recognized the value of WHP programs making them part

of its Healthy People Initiatives. Healthy People 2010 specifically recommends that the number of worksites with 50 or more employees offering nutrition and weight management services, increase from 55% to 75% (Healthy People.gov, 2011). And the Healthy People 2020 objectives further that initiative by striving to “Promote the health and safety of people at work through prevention and early intervention” (Healthy People 2020 Objectives, 2011).

Effective WHP Programs

A WHP program, when properly designed, is most likely to increase employee health, wellbeing, and productivity while decreasing healthcare costs (Goetzel & Ozminkowski, 2008). Two key elements to successful and effective WHP programs are Health Risk Appraisals (HRAs) to determine and identify health concerns and assess needs, and incentives to encourage and increase participation (Della, DeJoy, Mitchell, Goetzel, Roemer, & Wilson, 2010).

Health Risk Appraisal

Health Risk Appraisals (HRAs) have become an instrumental part of many worksite health promotion programs. HRAs have been used as a method of making individuals aware of health behaviors, most importantly, those behaviors that, if not mitigated, could result in significant morbidity or mortality (Huskamp & Rosenthal, 2009). The worksite is an ideal place to use a HRA because it provides a basis on which a wellness program can be designed and delivered in a more targeted and effective manner. In addition to increasing employee awareness of their personal health concerns, it allows them to self-select programs that address their individual health concerns. Most HRA vendors have the

capacity to provide aggregate pre- and post-test data that could help in evaluating the effectiveness of interventions offered at the worksite.

In 2007, the CDC Community Guide branch of the National Center for Health Marketing (NCHM) at the Centers for Disease Control and Prevention conducted a thorough review of literature identifying how to best use HRAs in the workplace (Health Risk Appraisals, 2010). Findings supported prior literature that HRAs used in conjunction with a comprehensive health promotion and education program yielded the best result (Goetzel & Ozminkowski, 2008).

Incentives

Participation in any or all aspects of the WHP program is the primary key to success for the desired outcomes. Incentivizing participation is a universal tool used to achieve enrollment and involvement. Indeed, it is estimated that well over 70% of WHP programs use some sort of incentive system to increase employee enrollment and participation and are a recommended component of successful WHP programs (Anderson, Grossmeier, Seaverson, & Synder, 2008; Kruger, Yore, Bauer, & Kohl, 2007). Incentives can take many shapes (e.g., financial incentives, paid time off from work, material rewards such as t-shirts, gym bags and gift cards), but most researchers believe that financial incentives are the most effective (Anderson, et al., 2008). Incentives can also be considered motivation toward enrolling in a program, which also could include accessibility of facilities, ability to include family members, supportive work environment and encouragement from management and coworkers (Kruger, et al. 2007).

Worksite Health Promotion in a University Setting

The university setting can be a prime environment for developing effective WHP programs due to their vast health-related facilities and resources, and the potential of dynamic and ongoing health research disciplines. However, there is a paucity of outcome studies related to this population (Linnan, et al., 2009) and the few research articles that report on programs based in university settings cite literature from non-university based worksite wellness programs.

Although universities often have greater resources for developing WHP programs than most business and industry settings, bureaucratic structure and departmental boundaries can limit use of these resources (Reger, Williams, Kolar, & Douglas, 2002). Also, the size and diversity of employees on a university campus can challenge program planners in many ways. These challenges might include communication about enrollment criteria, available programs and availability of facilities. By using an employee participatory approach to include a five-member steering committee, a 37-member advisory committee and others to participate in the planning process, Reger and associates overcame many of these barriers (Reger, et al., 2002). Their goal was to assess university community and individual employee needs and devise a campus wide program to meet these needs. The outcomes allowed the university to provide a well thought-out and tailored wellness program and “established a system to help develop a university environment conducive to social and individual empowerment toward high-level wellness” (Reger, et al., 2002, p. 511).

Employees of a university may also prefer to access facilities and services off campus. A university or college campus setting is often integrated into the community in which

they are situated; therefore an overarching goal of Reger and associates research (2002) was also to identify and mobilize community resources. By reaching out into the community, this strategy helped overcome institutional barriers and facilitated wellness activities in every aspect of the employee's life (Reger, et al., 2002).

The University of Utah's Employee Wellness Program

Background

The University of Utah started its Employee Wellness Program in 2007 with the goal to increase the awareness of health-related behaviors of university employees (Gines, 2009). By completing an outsourced HRA product hosted by WebMD, employees became eligible for a discount of \$40/month toward their monthly health insurance premium.

Enrollment

In the first year (2007-2008), enrollment in the WellU program required participation in the HRA only; personalized feedback came directly to the employee through WebMD. Measurements of height, weight, BMI, cholesterol/glucose screening, heart rate and blood pressure (biometrics), were optional. During the second and third years (2008 -10 fiscal), HRA and biometrics were required. Subsequent changes included dropping the requirement for biometric screenings in 2010-2011 fiscal, changing HRA Vendors 2011-2012 fiscal year. Beginning with open enrollment in 2011, in addition to completing the HRA, the program will require participation in two or more specified programs and/or wellness activities such as enrolling in an exercise class on campus or visiting a personal physician for preventive screenings.

Approximately two-thirds of the university's 15,000 benefits eligible employees are taking advantage of the WellU HRA program. This year will complete the fifth full year of this program. However, it is unknown whether the enrollees are participating in additional group health interventions or making health-related changes. Therefore, one purpose of this study was to assess the health outcomes of the HRA.

After the HRA assessment and feedback, enrollees are encouraged to participate in a number of wellness programs offered on the university campus including the fitness classes offered through the Exercise and Sports Science (ESS) department and the Employee Wellness Center individualized health, fitness and nutrition consulting program (started in 2010). Employees were also encouraged to use university or off-campus fitness and recreation facilities.

Motivation and Barriers

A foundational requirement for success of WHP programs is the evaluation of employee's perceived barriers and motivators for participating in the program. To date, there is little published data regarding why participants enroll or regarding the perceived barriers and motivators for participation in a university-based WHP program (Ball, 2009; Reger et al., 2002). By understanding and addressing these perceived barriers and motivators to participation, program managers could construct a more inclusive approach to maximizing the participation in WellU as well as other university based WHP programs.

Research Methods

Research Questions

The research questions for this study included:

1. How did participation in the WellU program impact behavior change in this population? (Participation is defined as employees who completed the HRA and received a personalized report and tailored behavior change messages). For example, did an employee quit smoking or lose weight as a result of the information provided in the HRA report?
2. How did the incentive influence employees to participate in the program? Would they have done so without such a generous incentive?
3. What were the motivation and barriers to participation in the WellU program HRA?
4. Did participation in the WellU program affect the employee participation in WellU sponsored programs and/or community activities to improve their health?

Research Design

Four focus groups were conducted with employees enrolled in the WellU program ($n = 15$) and those employees not enrolled in WellU ($n = 12$) to address process evaluation questions, examples of which are listed below. Four 90-minute focus groups were conducted over a 2-week period. The feedback from the focus groups measured perceived behavior changes, barriers and motivators of WellU participants and nonparticipants. Additional questions sought feedback from participants related to improvement and recommendations for this program.

The purpose of the focus groups was: 1) To gather feedback concerning motivators for faculty and staff participation and barriers to enrollment in WellU; 2) to answer the research questions stated above and 3) To respond to specific questions related to the benefits and services offered in the WellU program as well as gather information pertinent to the administration of the program.

The questions were developed based on the concerns of the WellU administrators and stakeholders as well as to fulfill the needs of the research questions being investigated. Qualitative data from the focus groups were summarized to determine perceived behavior change, barriers and motivators of WellU participants and nonparticipants. Participants were given \$25 as compensation for their time. This money was made available as part of an internal university grant.

Participant Selection Criteria and Recruitment

Six to eight university employees participated in one of four 90-minute focus groups designated as faculty/participants, faculty/nonparticipants, staff/participants, and staff/nonparticipants. These study participants were recruited by verbal encouragement from department administration, flyers, e-mail notifications and word of mouth. Focus group participants represented a diverse cross section of university faculty and staff. Recruitment efforts took place in every area of the campus in order to provide equal access to study participation across campus.

The investigator received IRB approval before beginning focus group interviews. Focus group participants were asked to sign an informed consent at the time of the focus group that explained the objectives, possible risks, and benefits of the study. In order to maintain the confidentiality and integrity of the focus group responses, responses were de-identified.

To protect privacy, members of the focus groups were encouraged to respect and maintain the confidentiality of their fellow group members.

Instruments

Focus group questions. To stimulate discussion, questions from the validated 2004 Healthstyles Survey that focused specifically on WHP were incorporated. The 2004 Healthstyles Survey was a national health habits survey developed by experts of several health agencies, including the Centers for Disease Control and Prevention. Specific and unique questions from WellU administrators also facilitated discussion.

Questions asked of Participants:

- How did you become aware of the WellU program?
- Are you aware of the premium discount on your health insurance for participating in WellU by taking a health risk appraisal and having your biometric assessment?
- Did you learn something new about your health from completing HRA? Did the process of completing the HRA and the final score make sense to you?
- Did you make changes in your behavior as a result of the HRA and WellU program? If so, please elaborate.
- In 2008, WellU/Human Resources rolled out a preventive care benefit; did you participate in this benefit? If so did you identify any health issues and did you go to a doctor to seek further treatment for this health concern?
- Did you receive a call from a health coach? If so, did the health coach help you address any health issues?

- Are you aware of your individual health consulting benefits (passport program) through the employee health center? If so, did you use them and what were the results?

Questions asked of Nonparticipants:

- Are you aware of the WellU Program?
- If so, did you ever attempt to enroll in the program? If so, why did you stop or not continue the process?
- Why are you not participating in this program? (Barriers)
- What would motivate you to participate?

Data Collection

A lead facilitator and two observers present to record notes facilitated focus groups. Each focus group was digitally recorded to make sure notes could be validated and were a complete and accurate representation of what was said. Notes and recording for each session were transcribed and thoroughly reviewed for common themes. All data collected during focus group discussions were organized into thematic constructs (see Table 3.1).

Data Analysis Procedures

The qualitative data collection methodology used in this study was typical to a grounded theory methodology of qualitative research, which generally uses an interview strategy either in groups or individually. According to Morse and Richards (2002) notes and recordings are often taken simultaneously to insure all data are recorded and taken into account (Morse & Richards, 2002). Focus groups are often used to highlight issues within a particular research environment or domain, and because open-ended questions are asked,

Table 3.1: Focus Group Derived Themes and Constructs

<i>Time</i> – to complete HRA, to participate in WellU sponsored programs
<i>Communication</i> – lack of communication, lack of knowledge about available programs and services related to WellU, communication difficult to read and understand - Trust in results – HRA, biometrics
<i>Satisfaction</i> – all participants were generally satisfied – the incentive made most people happy because the cost/benefit ratio was huge. One hour of time for \$480 worth of benefit with no commitment to behavior change
<i>Confidentiality</i> – concerns over who had access to the individual HRA reports and biometric data

researchers often learn more than the original research question set out to answer. This requires the researcher to be skilled at coding and able to simplify and focus on the specific characteristics of the data which provide the insights (Morse, et al., 2002).

Inherent to qualitative research and particularly to the analysis of interview and recorded focus groups, data coding must take place. Descriptive and topic coding serves to categorize and store data while analytic coding is used to develop themes and constructs out of the data (Morse, et al., 2002). The researcher received transcribed notes from the two note-takers, as well as personally transcribed the voice recordings. A careful and thorough comparison of these two data sources were conducted and subsequently coded to identify the themes and constructs that are discussed in the results section. The analytic coding then took place manually by categorizing common responses to each area of questioning and identifying the number of times these responses were articulated. The recurring responses were then used to establish the themes characterizing these commonalities. These themes and supporting quotes are reported in the results section of this article.

Results and Discussion

In this section, the results of the analysis and interpretation of the focus groups data are presented as key themes identified with respect to each of the research questions. The major themes and constructs that arose from the coding of the focus group discussions are in Table 3.1.

Responses to Research Questions

Awareness and Behavior Change

Research Question: How did participation in the WellU program impact behavior change in this population? (Participation is defined as employees who completed the HRA and received a personalized report and tailored behavior change messages.) For example, did an employee quit smoking or lose weight as a result of the information provided in the HRA report? The focus group data collected from participants in the program supported the hypotheses that the information learned from the HRA prompted behavior change and reduced health risks. Selections of the verbatim comments recorded were: “I did learn something about my health and I look forward to seeing improvements next year,” and “it was consistent with what I expect(ed), no surprises.” Most participants agreed that having biometric information was the most important and motivating factor toward change. Watching those changes year after year were reported as motivators. One participant said, “biometrics were more helpful than HRA,” and another, “biometrics would be more likely (than the HRA) to motivate me to make a change.” One participant felt that actual behavior change was not emphasized enough and that the program “should push behavior change.”

On the other hand one participant stated he “didn’t learn anything from the results” and another was “offended by results, and didn’t know what to do with the results.” Most agreed the program didn’t seem to reward or encourage behavior change because “they do not ask you to do anything except take the tests.” Questions came up about one’s state of health, “do they do anything if you do not ‘pass’ the biometrics.” Most agreed that the promotion of the program they had seen was more about the incentives than the potential behavior changes. Stated concerns with biometric assessment included one participant who found it “de-motivating” (participant was obese); another found it to be less than accurate. Conversely others found it to be the most motivating part of the assessment process.

Increased Participation in Health Related Activities

Research Question: Did participation in the WellU program affect the employee’s participation in WellU-sponsored community activities to improve their health? Chapman found that employers who administered HRA but did not provide meaningful follow-up interventions would be less likely to see changes in employees’ health and related outcomes (Chapman, 2005; Goetzel & Ozminkowski, 2008). The university currently provides several opportunities for employees to follow through with behavior change intentions using on-site facilities and services. These include an active employee recreation program, onsite exercise classes run through the ESS department, a campus field house, which serves as an onsite fitness center and an employee wellness center, which provides individualized services such as coaching and nutrition consultation. Employee responses to the use of these facilities with regard to the ESS (Exercise and Sports Science) classes include: “I would love (to) participate, but I am off campus. Remote locations do not lend themselves to participation in these on-campus programs,” and “I didn’t understand this

was part of the (WHP) program.” The latter comment reinforces the need for accurate and clear communication as part of an effective strategy for WHP programs. Regarding the onsite employee wellness facility (Passport program), only two out of 14 participants were aware of this program and both had used this service with great results. “The nutrition consultation was very helpful to me.” After learning about this program most participants thought it would be the most valuable program the WellU could offer. However, many stated that finding time to use this service would still be an issue.

One participant (female) had the personalized nutrition consultation through the employee wellness center and commented “it made a big impact on my health.” She realized that she was mainly concerned with her calorie intake and not what she was actually eating. Her consultations made her more aware of what she needed to eat to be healthy. She also commented on how “good” these consultations were because they were individualized. “They took my height, weight, exercise habits, and this was beneficial to making my portion sizes and food choice right for me.” She commented that, being more aware of what she was eating made a positive change in her life. Another female participant saw the dietitian because her son had become a vegan and she wanted to know more about giving him the proper nutrients. She gave the person she saw a “10,” and stated, “she gave me incredible information.”

Participation and the Incentive

Research Question: How did the incentive influence employees to participate in the program? Would they have done so without such a generous incentive? Participation in any or all aspects of the WHP program is one of the keys to success. Incentivizing participation is a universal tool to achieve participation. These questions address the

underlying issue of motivation and barriers to participation. Regarding the motivators, focus group data cited predominantly the financial incentive; the \$40 per-month premium reduction is a more significant motivator than the health information that would follow. When asked if they would participate without the incentive – some said they would, but the majority would not.

For the majority, more than 60% of the group, the health insurance premium reduction incentive was the primary reason for motivating participation. Some participants stated that they were motivated by learning more about their health; however, the incentive helped initiate the process. When asked if they would participate without the incentive, the split was 50/50. One commented that she would; however, she did not believe any of her co-workers would participate without the incentive. Another commented that he would not have participated because he already knew enough about his health and didn't believe he would learn anything new from the HRA. Another enrollee stated she "couldn't quite understand the purpose of taking it, (the HRA)" and, when asked about the results, comments included "didn't care about the score, just wanted the \$40."

Barriers

In the discussion about barriers to participation with nonenrolled employees, focus group data collected from nonparticipants reflected the research questions. The barriers to participation included time, prioritizing participation in the program, professional and personal responsibilities such as teaching get in the way, a degree of skepticism relating to confidentiality and concerns about strange people calling and asking questions about that individual's health. Other concerns, barriers or reasons for not participating included keeping one's own health records, already knowing they are healthy, the incentive is not

enough, locations for participation in biometrics are inconvenient, scheduling of biometric (was) inconvenient, (already) on spouse's insurance plan so it was irrelevant to me.

Several indicated that the communication about the program was weak. In their minds they didn't understand enough about how the program worked, and completing the HRA was confusing and cumbersome. In order to enroll in the program the participant needed to register and create a pin number. Some gave up after attempting the process mostly due to confusion about pin numbers and how to access the product on-line. The majority felt it was too difficult to access; the pin numbers were a pain. Comments ranged from; "get rid of the pin numbers," "it took too long," and "should be more concise." Other barriers to participation in the WellU program were, time, "during work it's hard to make the time," and location, "I am not on campus and I cannot get here to do this."

Health Coaching

In the first 2 years, WebMD, the HRA vendor, offered health coaching by phone to those employees determined to be at moderate and high risk. One participant found this service to be very useful. Many participants in the focus group had received a call, some found it helpful, positive and encouraging, one found her coach did "everything right." However the majority found it invasive and commented that it was like getting a call from a call center. "I didn't get any positive help from the coach" one said, and wondered, "how long will this go on." One participant found the goal setting to be "redundant," and found it "intrusive," and believed the coach to be "unskilled," "not personal," and complained, "when I would get a call it would be a different coach each time who didn't know me, this was very frustrating."

Suggestions for Improvement to the Program

After discussing the research questions, the focus group facilitator asked for suggestions for the program. The common responses included communication, accessibility and management support for participation. Summarized answers to the questions for improvement follow:

Are there any changes you would like to see to the WellU program?

- Wanting to see more support from their supervisors and to get time off for exercise.
- Paid time to exercise so they wouldn't have to ask for time off of work.
- Programs in a closer location to where they work. One woman had started a yoga group in her office building and wondered if they could get an instructor to come to them, maybe once a week to make sure they did the poses correctly. Another mentioned bringing a variety of classes to the different colleges/locations on campus each month which might encourage people to sign up for the permanent classes offered at ESS.
- Most of the participants mentioned that the biometrics could be more private (They were just in an open room where everyone could see and/or hear).

What else can be done to motivate people to use WellU?

- Show how much money they can save by using WellU instead of an outside program.
- Interview people who have done it and put it in a newsletter, because it means much more hearing about it from co-workers.
- Tell what the programs can actually do for you (testimonials).
- Accessibility is an issue (make more locations for programs).

- Make specific newsletters for each program.

Are there any changes you would like to see to the WellU program?

- WellU newsletter could be more accessible, readable and understandable.
- Educating employees about the services available. “People could benefit from the individual employee wellness services, but no one knows about it.”
- Allow spouses to get the biometrics test, even if they have to pay for it Why not help the spouses as well since they are under the same insurance?
- Make headlines on the promotional e-mails sound more interesting, as it will be the deciding factor as to whether they read the e-mail, or not. One participant explained how he would not bother opening a link from an e-mail. Everyone agreed that the subject headings make the difference.
- Improve communication with the enrollees about the program benefits.

Conclusions and Implications

Conclusions supported the hypothesis that the incentives played a major role in participation. Consistent with the literature, the main barriers to participation were time and lack of communication/understanding about the program. One barrier not addressed in the literature that surfaced as a concern, was perceived threats to confidentiality. Although a third-party vendor administered the HRA, employees still felt that their personal information could and would be accessed by the university.

The impact of this program on actual behavior change as self-reported by focus group participants was positive, with the greatest change reported as a result of the biometric screening rather than the HRA report. Despite concerns over accuracy, the results of the biometrics year after year motivated employees to improve their numbers. These

implications show that the physical data make a difference and that if biometrics is not part of a program, employees should be encouraged to do preventive screening with their personal physician. However, with regard to behavior change, participants stated that the program provided very little encouragement to pursue healthy activities throughout the year. This implies that communication strategies were not effective because this WHP program provides several on-site activities for employees; however, time, accessibility, awareness and relevance undermine participation in these activities and interventions. All benefits eligible employees were eligible to participate in this program; however employees expressed confusion about eligibility for these programs which inhibited participation. The lesson here would be to focus more effort into communication strategies, monitoring, and follow-up to encourage participation.

The incentive was a strong motivating factor to participation. The level of participation related to the monetary value offered and supported the figures that the literature has found to be effective in motivating participation (Seaverson, Grossmeier, Miller, & Anderson, 2009). Fifty percent said they were motivated only by the incentive; however it would be interesting to compare changes in health risks by those motivated only by the money, to those motivated by the desire to learn more about their health risks. Further investigation could also explore how much of an incentive would be needed to prompt participation, and whether they would have participated if no incentive was offered. The interpretation of the information gathered in these focus groups and constructs and themes revealed is consistent with the literature review on motivation, barriers and behavior change. By industry standards, the participation rates in this program, which hovered around 65% over its five-year duration, are high as the average rate of participation in exemplary programs

is 60% (Goetzel & Ozminkowski, 2008). In this case, participation is defined by enrollment in the program, taking the HRA, and in years two and three, participating in the biometric screenings.

One limitation of this study was the self-selective nature of the participants and the fact that they may only represent those who have had positive experiences with the program.

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CHAPTER 4

BEHAVIOR CHANGE OUTCOMES OF A FIVE-YEAR INCENTIVIZED UNIVERSITY-BASED WORKSITE WELLNESS PROGRAM

FOR SUBMISSION TO *Evaluation and the Health Professions*

BEHAVIOR CHANGE OUTCOMES OF A FIVE-YEAR INCENTIVIZED
UNIVERSITY-BASED WORKSITE WELLNESS PROGRAM

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Setting: university, health focus, behavior change: Strategy: incentives: target population: adults, employees

Abstract

A program evaluation outcome research study was conducted to evaluate the effectiveness of the University of Utah's Employee Wellness Program (WellU) at improving health behaviors and status over five years, beginning in 2007. By completing an outsourced Health Risk Appraisal (HRA), approximately two thirds of the benefits eligible employees received \$40/month reduction of their monthly health insurance premium.

Using a pilot-tested questionnaire, all benefits eligible employees (n=10,441) were mailed an online survey to identify factors that motivate or deter participation in the WellU program and to determine behavior and health status change. Health behavior outcomes were self-reported using a retrospective "Then and Now" survey methodology that eliminates the need for identifiers to match pre- and posttest data which is useful in workplaces where employees are concerned about the confidentiality of their results (Pratt, McGuigan, & Katzev, 2000; Hill & Betz, 2005). A 3 group x 2 repeated measures quasi-experimental design was used to examine the differences in the effectiveness of the WellU program for three levels of employees: those who participated only in the HRA "HRA only," those who took the HRA and also participated in additional university or community bases wellness activities "HRA+," and nonparticipants. Post-hoc statistical groups based on demographic co-variants such as gender, age, level of risk and number of years enrolled were examined to better understand the impact of the program outcomes. Main effect comparisons were conducted to measure differences in self-reported health behaviors between participants vs. nonparticipants in the WellU program.

Of the 4,837 (46%) employees who responded to the survey, 81.4% were currently enrolled in the WellU program. Of those, 97.5% reported their primary motivation to participate was the incentive of \$40 per month discount on the insurance premium. The most significant barrier reported for those not enrolled was communication related, not aware of the program and lack of understanding how the program worked. Compared to the HRA only participants, the HRA+ activities participants experienced significantly greater levels of behavior improvement in the areas of physical activity, nutrition, BMI, cholesterol and self-reported health status. However the HRA+ group started at a lower level of health status than the HRA only group. In spite of health improvements, stress levels increased significantly from pre- to posttest for all groups.

The employees of the University of Utah benefited significantly by participation in incentivized worksite wellness program. Those who improved their health behaviors through participation in WellU or community wellness activities did improve their health status significantly from pre- to posttest. Employees who enrolled and only participated in the required HRA were in general healthier and had more healthy behaviors at the start of the program and reported less improvement as a result of participation in WellU.

Background and Introduction

Worksite health promotion (WHP) programs have emerged with the intention to prevent disease, increase employee productivity and morale, decrease employee absenteeism, and lower overall healthcare costs (Chapman, 2005; Department of Health and Human Services [DHHS], 2003; Harden, Peersman, Oliver, Mautherner, & Oakley, 1999; Pronk, 2004; Pronk, 2009; Shain & Kramer, 2004). These programs gained popularity in the late 70s, corresponding with concerns that our nation was experiencing a

health care crisis (Chenoweth, 2007; Ennes, 1970). As employers continued to experience the repercussions of escalating health care costs due to sharp increases in the cost of care and lifestyle related diseases, WHP programs began to take on more relevance. The leading causes of death and disability such as heart disease, cancer, and stroke are largely preventable (CDC Data Stats, 2011); thus implementing health promotion programs that educate employees about health and teach skills necessary to make positive behavior changes can have a significant impact on the health and quality of life of employees as well as the employer's bottom line (Edington & Shultz, 2008; Goetzel & Ozminkowski, 2008).

The costs to business and industry of providing health insurance to employees can be major and can provide motivation to promote healthy behaviors among employees. Most employed Americans spend on average 43 hours a week (8.3 hours per day) at work (American Time Use Survey, 2011). Because channels of communication already exist in the workplace, it provides a valuable setting to promote health messages, provide education, and teach skills such as healthy eating behaviors, or how to better manage stress (Goetzel & Ozminkowski, 2008; Merrill, Anderson, & Thygeson, 2011). Worksites often share a common purpose and culture, offering support socially through co-workers and administratively through management. Worksites have the capability to institute policies (such as a non-smoking policy) that can favor behavior change and reinforce being healthy. Additionally, worksites can leverage incentives to motivate program participation and increase the impact of healthy behaviors on the bottom line.

Outcomes

Most of the outcome evaluation studies of WHP programs have focused on the financial or return on investment (ROI) results. Several meta-analyses have been conducted and consistently report that the results of a comprehensive WHP programs demonstrate, on average, a ROI in employee health care costs of \$3.27 for every \$1 spent, and absentee days cost reduction of \$2.73 for every \$1 spent (Baicker, Cutler, & Song, 2010; Chapman, 2012).

Studies have shown direct significant evidence that links a reduction in medical and pharmacy claim costs with reductions in health risks (Edington, Yen, & Witting, 1997; Merrill, Hyatt, Aldana, & Kinnersley, 2011; Mills, Kessler, Cooper, & Sullivan, 2007). A recent meta-analysis conducted by Osilla and associates (2012) looked at financial outcomes, health effects and behavior change. It was based on the rigor of the study design, and the comprehensiveness of the program. To be included, programs had to contain multiple wellness components focused on health promotion or disease prevention (Osilla, Van Busum, Schnyer, Larkin, Eibner, & Matke, 2012). Only 33 articles out of 1556 reviewed fit these criteria, and results indicate a mixed impact on health and behavior outcomes. The authors concluded that more rigorous research was needed to truly understand the influence of incentives as a motivator for program participation, behavior change, and risk factor reduction (Osilla, et al., 2012).

Incentives

Incentivizing participation is a universal tool to achieve enrollment and involvement. It is estimated that well over 70% of WHP programs use some sort of incentive system to increase employee enrollment and participation, a recommended component of successful

WHP programs (Anderson, Grossmeier, Seaverson, & Synder, 2008; Kruger, Yore, Bauer, & Kohl, 2007). The right incentives with the right timing can be instrumental to the success of an incentive program. Hyatt-Neville and associates found that having more immediate gratification in cash awards for self-reported monthly healthy behavior as well as diversifying with benefits integrated cash and goods, the incentive program could increase its success (Hyatt-Neville, Merrill, & KUMPFER, 2010).

Understanding what inhibits participation will allow incentives to be structured to address the barriers of any given population. In certain groups, a discount on an insurance premium might not be valued as highly as paid time off to exercise. Seaverson and associates demonstrated the importance of a strong communication strategy and corporate culture as key elements of success, as compared with incentives alone when participating in the HRA (Seaverson, Grossmeier, Miller, & Anderson, 2009). This research ultimately showed that these factors produced a more significant effect on participation than the incentives themselves.

Benefits Integrated Incentives

Of the incentive programs structured to encourage and increase enrollment, benefits integrated incentives account for approximately 48% of the incentives offered in WHP programs (Incentive Driven Health Care, 2012). Typically, this kind of incentive is tied to HRA participation and the use of incentives is shown to be positively associated with program enrollment and participation rates in an HRA (Seaverson et al., 2009). Benefits integrated incentives tend to allow the employer to offer a greater cash value at a lower cost to the organization, and usually involve monthly or annual premium reductions, a richer health plan, or payments into a health savings or flexible spending account

(Anderson et al., 2008). Companies that provide this type of incentive package can provide a much higher value, on average \$131 higher, most often in insurance premium discounts, than companies that do not offer this option (Anderson, et al., 2008; Seaverson, et al., 2009).

The Use of HRAs in Worksite Health Promotion

Health Risk Appraisals (HRAs) are an instrumental part of many WHP programs, and are used to help make individuals aware of their health status and disease risk. The worksite provides a targeted audience that can be incentivized and, through the use of the HRA, made aware of their current health status and risks factors. Pai and associates found HRAs to be a useful tool in promoting health and positive changes in behavior (Pai, Hagen, Bender, Shoemaker, & Edington, 2009). Aggregate HRA data can provide direction for developing and targeting a wellness program.

Motivations and Barriers to Participation

A requirement for success of WHP programs is participation. Participation is defined based on program requirements that, in some cases, is just an HRA and in others an active participation in the programs offered within the structure of the WHP program. Knowing why employees participate (motivation) or do not participate (barriers) allows program planners to reinforce participation and address the concerns of the nonparticipants. Needs assessments and Health Risk Appraisals are two tools used to identify actual and perceived needs of the population as well as the wants, desires and opinions. This information will help make programs relevant and acceptable (Ball, 2009; Barker & Glass, 1990; Eckard, Ebro, & Claypool, 1988; Glasgow, McCaul, & Fischer, 1993; Reger, Williams, Kolar, &

Douglas, 2002; Serxner, Anderson, & Gold, 2004). Program planners and health educators need to identify and address barriers and concerns that may influence lack of participation. These barriers, although harder to identify without direct input from employees, typically involve issues with time and communication. Worksite health promotion programming can be adapted in response to these barriers and the identified benefits experienced by participants can increase the efficacy of future health promotion efforts.

To date, there are few published studies of university-based WHP programs that provide an understanding why participants enroll and attend as well as the perceived barriers and motivators to participation (Ball, 2009; Barker & Glass, 1990; Eckard, Ebro, & Claypool, 1988). These findings will also support the successful development of other university-based WHP programs.

University-based Worksite Health Promotion Programs

University settings can be prime environments for developing effective WHP programs because of their vast health-related resources, dynamic health research disciplines, and large and diverse employee populations. Universities often have greater resources for developing WHP programs than other businesses and private industries, such as existing fitness facilities and wellness programs. University and college campuses also differ from traditional worksites and are more akin to small communities with employees ranging from service workers to senior level faculty and administrators.

Montgomery (2008) found 18 university-based health and wellness programs with a variety of structured and nonstructured components. Despite these 18 programs being implemented in research-intensive universities (where effectiveness was more likely to be appreciated as a measurable goal), 12 had not been formally evaluated and no statistical

outcome evaluation data was available. Of the six that had been evaluated, only two reported on a purposeful, time bound study (Montgomery, 2008). A Midwestern university conducted a 12-week program with pre and posttest data to measure changes in biometric parameters as weight, BMI, cholesterol and blood pressure. Researchers at Slippery Rock University conducted a 16-week intervention study to determine the effects of knowledge and the interventions on similar biometric parameters (Montgomery, 2008). Both studies reported significant improvements in employee weight loss, BMI, decreased hypertension, and blood cholesterol. The other four university programs cited were evaluated for effectiveness, using a retrospective pretest/posttest survey design, or the reports that identified participation and outcomes; reported improved biometrics, as well as increased exercise, and decreased tobacco and alcohol use (Montgomery, 2008).

If other universities and colleges are currently offering wellness programs to their employees, their outcomes are not being reported in the research literature or in practice (Linnan, et al., 2010). Most of the articles that report on university-based WHP programs cite outcomes in commercially-based worksite wellness programs. The literature reporting directly on the effectiveness of college and university based WHP programs is very limited (Ball, 2009; Barker & Glass, 1990; Eckard, Ebro, & Claypool, 1988; Linnan, et al., 2010). Linnan and associates (2010), researching community colleges settings for promoting employee health, confirm this gap in the literature and further state that the papers reviewed lacked rigorous program evaluations or provided no results from interventions (Linnan, et al., 2010).

The University of Utah WellU Employee Wellness Program

The WellU program began in 2007 as a means to increase the overall health and well-being of all benefits eligible employees, and their families, at the University of Utah. In this benefits integrated incentive based program, employees who completed the Health Risk Appraisal (HRA) became eligible to receive a discount of \$40 per month towards their health insurance premiums. The program was started in order to facilitate university employee's awareness of their personal health and well-being, with the hope that with this awareness, employees would make changes toward healthier behavior (Gines, October 2009).

In the first year (2007-2008), the program required HRA only; personalized feedback came directly to the employee through WebMD, the HRA vendor. Measurements of height, weight for BMI, cholesterol/glucose screening, heart rate and blood pressure (biometrics) were optional. During the second and third enrollment years (2008-2010), HRA and biometrics were required. Biometric screenings were provided on campus or on-site in remote campus locations. After the HRA assessment and feedback, enrollees were encouraged to participate in a number of wellness programs offered on the university campus. These options included Peak Academy Fitness classes and the Employee Wellness Center Passport program (started in 2010). Employees were also encouraged to enroll in activities in the community if this was more convenient and desirable. In year four (2010-2011) the HRA vendor changed from WebMD to Regence Blue Cross, the University of Utah's health insurance provider. The biometric screening became voluntary. In year five (2011-2012) biometric screenings were no longer available as part of the program, instead, employees were encouraged to obtain biometric and preventive

screening through their primary care physician and were required to take part in two wellness activities. This upcoming fiscal year (2012-2013), employees will continue with the Regence Blue Cross Health assessment and self-report on two preventive screenings or wellness activities to continue enrollment.

As of July 2012, approximately 58%, (6,030) of the university's 10,331 benefits eligible employees, not including the hospital and clinic employees, were participating in WellU. These participation figures have ranged between 6,216 (57%) in July, 2008 to 8,098 (71%) in July, 2011 (Johnson, 2012). This year (2011-2012) will complete the fifth full year of the WellU program. However, it is unknown how many of the 6,030 employees currently enrolled in the program have made behavior changes and are participating in additional group health interventions or personal programs to change their risk factors as identified by the HRA. Hence, the primary purpose of this project is to better understand the outcomes of the HRA on health risk status and behaviors.

Implications

Numerous studies have emphasized the need to support the belief that worksite health promotion programs truly have an impact on employee's health and well-being. Additionally, statistics are needed on how effective HRA participation is on actual behavior change. Research in these areas is limited (Huskamp & Rosenthal, 2009; Pai, et al, 2009; Osilla, et al., 2012;). Although there is data to support these outcomes, more data needs to be collected, analyzed and presented in an unbiased and scholarly manner to continue to demonstrate and validate these results (Berry, 2010; Goetzel & Ozminkowski, 2008; Pai, et al., 2009; Pronk, 2010; Osilla, et al., 2012; Underwood, 2011).

The prevalence of WHP programs has exponentially increased within the last few decades, but very few programs are meticulously evaluated for effectiveness after their initial implementation (Berry, 2010; Pronk, 2010). Because businesses invest both time and money on implementing WHP programs and making them accessible to employees, it only makes sense to evaluate them and provide feedback on how to improve these programs and support those features that work (Goetzel & Ozminkowski, 2008).

Effective health promotion programs are not a matter of chance, they are the product of carefully conducted needs assessments, identifying program objectives, developing the appropriate interventions, delivering and finally evaluating the program (Goetzel & Ozminkowski, 2008; McKenzie, Neiger, & Thackeray, 2009; Pronk, 2010). These elements work in concert with each other, and are often driven by many considerations to include the stakeholder's needs, available resources, time, availability of target population for assessments, and specifications put forth by a grant or a particular funding agency (Hodges & Videto, 2005). The mission and goals of these programs should be based on considerations that include stakeholders' desired outcomes as well as the resources available, including both time and money.

This outcome study will be the first evaluation performed on the WellU program and will allow its stakeholders the opportunity to determine if the choices made for the program have in fact produced the outcomes hoped for and expected.

Study Aims

The specific aim of this survey research is to evaluate the effectiveness in improving health behaviors and status of the University of Utah's (U of U) Employees' Wellness Program (WellU), in the first 5 years. The goal of this evaluation is to identify the

outcomes and determine the overall effectiveness associated with an incentivized Health Risk Appraisal (HRA) and biometric screening-based workplace wellness health promotion program in a university setting. To achieve this goal, an online survey was sent to all benefits eligible employees on the main U of U campus to measure how participation has impacted the health of the participants of the WellU program, as well as to determine what motivated participation and what barriers are keeping other employees from participating in the program.

Considering the overall objective of the WellU program - to increase the self-health behaviors of employees of the University - the purpose of this research was to conduct a process and outcome evaluation of the Health Risk Appraisal (HRA) alone compared to the HRA plus additional wellness activities in facilitating improved health behaviors in university employees. In addition, this research sought to determine the factors that motivate employees to participate in the WellU Program and determine the barriers to participation.

While a significant amount of money has been put towards implementing and promoting the WellU program, very little has been dedicated towards evaluating the program. The outcomes from this evaluation will report the impact of the WellU program to date and indicate possible strengths and weaknesses that may support the Human Resources stakeholders in maintaining or improving upon the program to better facilitate the health outcomes for employees.

Hypotheses

It is hypothesized that since the inception of the WellU program:

- 1) Employees who participated in the HRA and also in voluntary wellness activities will have greater behavior change and biometric status improvements than the HRA only employees (employees who completed the HRA without any follow-up healthy activities) or the nonenrolled employees.
- 2) Enrolled employees of the University of Utah have a greater awareness of their personal health behaviors as a result of the HRA.

Methods

Study Procedures

The idea to conduct an outcome evaluation study of the WellU program was first presented to the Vice President of Human Resources at the University of Utah in November of 2009. It was important to gain the buy in and support of Human Resources (HR) in order to have access to the information necessary to develop the study. At that time, the WellU program was in its third year. A follow up meeting was conducted in January of 2010 with the primary stakeholders of WellU including the current program administrator, the director of the employee wellness program, the director of the Peak Academy and others who had assisted in the program development. This meeting reinforced the need and desire to conduct an outcome evaluation, as well as a process evaluation to understand the motivations and barriers to participation. Participation at that time was approximately 66% of the total benefits-eligible population. The focus group phase of this research was conducted in April 2010. These data contributed significantly to the development of the survey. Due to planned changes in the program, the stakeholders

requested the survey be delayed until late 2011. Ultimately, after several revisions to the survey and additional requests to delay, the survey was distributed campus wide to all benefits eligible employees using Human Resources e-mail distribution capability in June 2012. This was good timing because the program had just completed its fifth full year.

Participant selection criteria. Potential participants for the online survey included male and female benefits eligible employees at the University of Utah with the exception of hospital and clinic employees. At the time of the survey, 10,444 employees were available for sampling within the current University of Utah employee database. One month was allowed for survey completion and return. A reminder was sent out three weeks into the survey period. To increase participation, incentives included the possibility of winning a weekend stay at a cabin in a nearby ski resort or at a home near Zion National Park, an iPad, or one of eight \$25 gift certificates were offered. The survey resulted in 4,837 participants or 46 % of the total sample surveyed.

Design. This study employed an exploratory mixed methods research approach to answer the research questions consisting of two phases: 1) qualitative focus groups and 2) a quantitative total sample online survey to all University of Utah employees. This mixed methods approach, using both qualitative and quantitative data collection and analysis, offers more insight than using them independently (Creswell, 2009, p. 203). Qualitative data from the focus groups have been summarized and used to determine perceived behavior change, barriers and motivators of WellU participants and nonparticipants. This preliminary data collection helped to establish constructs which contributed to the survey development. The results of the focus group data are detailed in chapter three, article two of this dissertation.

In the second phase of the study, a research survey was administered. The intent of the survey was to measure changes in health knowledge, behaviors and status over the course of the program. The online survey employed a quasi-experimental recollection proxy pre- and posttest design (Campbell & Stanley, 1973) that protects participant confidentiality since no names or codes are needed to match pre and posttest answers. To address the research questions and hypotheses, three post-hoc statistical groups were constructed for comparison in the data analysis: Group #1 participants in the WellU program who only completed the HRA “HRA only,” Group #2 participants in the WellU program who completed the HRA and participated in additional wellness activities “HRA plus Wellness” and Group #3 employees not enrolled in the program referred to as “nonenrollees.” A fourth group was added to account for employees who were formerly but are not presently enrolled. Reasons why they discontinued the program will be reported.

Additional outcome comparisons were conducted by considering self-reported behavior change based on the participants by age, gender, and pretest health status.

Data Collection

The one time online data collection survey employed a “Then and Now” data collection method found to increase the validity of self-report survey responses in students (Rhodes & Jason 1987) and parents (Kumpfer, O’Driscoll & Xie, 2012) and employees (Pratt, McGuigan, & Katzev, 2000; Wright, Kumpfer, 2006) of sensitive health status information.

This single retrospective pre- and posttest method has added advantages over a traditional pre- and posttest data collection strategy, because it reduces participant testing burden and attrition from the sample, assures that pre- and posttest can be matched for a valid data analysis, and are confidential, to increase the accuracy of the reporting. Another

advantage is the reduction in response shift bias that typically occurs in traditional pre-posttest design when participants, knowing they are being tested for an outcome, modify behavior to that outcome (Pratt, McGuigan, & Katzev, 2000). Because participants are rating themselves at one point in time, changes in self-reported knowledge and behavior may be more accurately represented by retrospective pretest designs than by the traditional pre- posttest design (Pratt, et al., 2000).

The disadvantages are memory and positive response bias. However, since totally accurate health data for weight, level of physical activity, and nutrition is not necessary, approximations will suffice. Positive response bias is likely to be equivalent across the three comparison groups. Typical response biases in weight and health status by gender were taken into consideration in gender analyses (Baker, Stabile, & Deri, 2004; Bound, Brown, & Mathiowetz, 2001).

There are no subject identifiers attached to the data. There is no way to identify the individuals responding to the survey therefore protecting confidentiality of all responders.

Instruments. The principal investigator (PI) reviewed currently validated instruments used as evaluation tools for WHP programs through the Health and Psychosocial Instruments (HaPI) database. Because there are no standardized evaluation or client satisfaction instruments currently being used for the WellU or the HRA products in use, the PI adapted the best existing standardized self-report health and lifestyle survey instruments. The single survey instrument includes scale questions concerning process evaluation data such as client satisfaction, reasons for participation or non-participation and outcome evaluation scale questions that match the research questions and hypotheses. The REDCap shared library of survey instruments was also reviewed. The REDCap

Shared Library is a global repository of data collection instruments that can be downloaded and used in a REDCap project.¹

Using the REDCap application, the survey questionnaire, a 40-item survey for participants and 25-item survey for nonparticipants, was designed to increase the likelihood of participation from university employees. The survey was developed based on the needs of the stakeholders, the results from previously conducted focus groups and some adapted questions from the standardized instruments reviewed such as the CDC Behavioral Risk Factor Surveillance System (BRFSS) and the CDC Healthstyles Survey as a basis for the outcome evaluation questions (CDC BRFSS, 2011). The BRFSS questionnaire was designed by a working group of state coordinators and CDC staff. Currently, the questionnaire has three parts: 1) the core component, consisting of the fixed core, rotating core, and emerging core, 2) optional modules, and 3) state-added questions. The fixed core is a standard set of questions. It includes queries about current behaviors that affect health (e.g., tobacco use, women's health) and questions on demographic characteristics. Only selected fixed core questions will be used for the purposes of this survey (CDC BRFSS, 2011). The CDC Healthstyles Survey is a national health habits survey developed by experts of several health agencies, including the Centers for Disease Control and Prevention. The 2004 Healthstyles Survey was a volunteer mailed survey intended to measure American health habits. Kruger and associates (2007) used WHP data

¹ Study data were collected and managed using REDCap electronic data capture tools hosted at [University of Utah].¹ REDCap (Research Electronic Data Capture) is a secure, web-based application designed to support data capture for research studies, providing: 1) an intuitive interface for validated data entry; 2) audit trails for tracking data manipulation and export procedures; 3) automated export procedures for seamless data downloads to common statistical packages; and 4) procedures for importing data from external sources.

from the 2004 Healthstyles Survey to examine barriers, motivators, and potential use of WHP services and policies among US adults employed full or part-time.

Human Subjects Consent. The survey was emailed with a cover letter to all benefits eligible employees. Consent to participate in the online survey was implied by their clicking on the link to the survey. The cover letter was worded as follows. *There is no identifying information on this survey. All responses are anonymous and totally confidential. The Principal Investigator and her statistical team will analyze the de-identified data and only aggregate results will be reported. Please click on the link below to access this on-line survey. It should take 5 to 10 minutes to complete the questionnaire. Participation in this study is voluntary. You can choose not to take part. You can choose not to finish the questionnaire or omit any question you prefer not to answer without penalty or loss of benefits. By returning this questionnaire, you are giving your consent to participate in this research.* The complete cover letter and survey are included in the appendix.

Statistical Methods

Descriptive statistics were reported using percentages and count for categorical parameters; mean and standard deviations for continuous parameters. Chi-square test was used to determine the association of demographic characteristics and other categorical factors between two groups. To compare the level of behavior changes, Man-Whitney test was used with two group comparisons; otherwise, Kruskal-Wallis test was used with three group comparisons. Two independent groups of t-test were performed and one-way ANOVA was performed with three group comparisons. To determine the strength of the behavior changes, we performed univariate logistic regression and computed odds ratios

and 95% confidence interval. Cohen's d effect size was calculated to evaluate the difference between two groups at pre- and posttest, as well as the strength of the change from pre- to post test. Statistical significant level was set at $p < 0.05$. All of the analyses were done using SAS 9.3 (SAS Inc., N.C.).

Results

Demographics

Of the 4,837 (46%) benefits eligible employees who responded to the electronic survey, 38% were male and 62% female. The demographic composition of university employees is 48% male and 52% female; however for those enrolled in WellU is 41% male and 59% female. The demographics of the responders are shown in Table 4.1. Of interest is that a higher percent of women who enrolled in WellU also participated in the HRA + wellness activities than the men did.

These demographics also contain variables that might be associated with employee health and wellness status to include employee status; staff exempt or nonexempt; faculty or staff; location on campus; education level and ethnicity.

Ethnicity. The respondents to the survey closely reflect the demographic breakdown of the university population, but with a higher response rate (85%) from Caucasian, compared to 78% for the overall university population. Six percent of respondents were Asian, but less than 1% was African American, Native American, Native Hawaiian or Pacific Islander. Two percent chose "prefer not to answer" this question.

Motivations and Barrier. All participants responded to the question "What was your primary reason (motivation) for enrolling in WellU?" The majority, 97.5%, responded that the \$40/month discount to the insurance premium was the primary motivator followed by

18% wanting to learn more about their health status and risk. Although this question inferred one answer, some answered with more than one reason. Nonenrolled employees responses to the question “If you are not currently enrolled, why” indicated that *lack of awareness of the program* (23.4%); and a *lack of understanding as to how the program works* (22.8%) as the primary reasons and *no time* followed at 15%. Other reasons included are depicted in Table 4.2.

Those who had been previously enrolled but were not currently enrolled listed missing the deadline (36%) and having no time to re-enroll (15.5%) as the major issue and losing interest (8%) in the program, as the most frequent reasons for this lapse.

Group Comparison in Health Behavior Changes

Physical Activity. The HRA only group compared to the HRA + wellness group reported a statistically significant ($p = <0.0001$) higher level of exercise before participating in WellU. Both participant groups reported a significant increase in physical activity ($p = <0.0001$) after participating in WellU to the same average posttest mean (mean = 3.9 times per week). However, the Cohen’s d effect sizes were ten times larger for the HRA+ group compared to the HRA only group ($d = 1.09$ vs. $d = .10$). The HRA+ group reported a 70.4% increase in physical activity. Based on the odds ratio, participants in this group were 18.84 (95% Confidence Interval (CI) 14.821 – 23.960) times more likely to increase their physical activity levels compared to only 11.4 times for the HRA only group. See Tables 4.3 and 4.4.

Fruits and Vegetables. At the beginning of the program or pretest, a higher percentage of the HRA only group (34.7%) reported consuming 6 + fruits and vegetables per day as

Table 4.1: Demographics

Demographics		Participants vs. nonparticipants					
		HRA only		HRA + wellness		Never enrolled	
<i>Total n=4837</i>		Participants (%)		852 (20.57%)		2519 (60.83%)	
		Mean Age Yrs. (\pm SD)		41.43 (\pm 11.62)		44.27 (\pm 12.34)	
Variables	level	n	(%)	n	(%)	n	(%)
Q1 Gender	Male	319	(37.5)	842	(33.5)	210	(42.3)
	Female	531	(62.5)	1670	(66.5)	286	(57.7)
Q3 U employee Status (<i>main campus staff: non-exempt</i>)	1	178	(20.9)	634	(25.2)	142	(28.1)
Q3 U employee Status (<i>main campus staff: exempt</i>)	1	336	(39.4)	1008	(40)	142	(28.1)
Q3 U employee Status (<i>main campus faculty</i>)	1	197	(23.1)	381	(15.1)	114	(22.6)
Q3 U employee Status (<i>other</i>)	1	155	(18.2)	516	(20.5)	106	(21)
Q5 Education level	< High school	1	(0.1)	1	(0)	1	(0.2)
	High school	2	(0.2)	3	(0.1)	0	(0.0)
	High school/GED	10	(1.2)	68	(2.7)	19	(3.8)
	Some college	78	(9.2)	456	(18.1)	72	(14.5)
	College degree	291	(34.2)	911	(36.2)	154	(31)
	Graduate degree or higher	469	(55.1)	1076	(42.8)	251	(50.5)

Table 4.2: Perceived barriers to participation in WellU (nonparticipants)

Reasons why not currently enrolled <i>Total n=(770)</i>	Previously enrolled but not currently enrolled (n=265)		Never enrolled (n=505)		Chi ² <i>p value</i>
	<i>n</i>	(%)	<i>n</i>	(%)	
Not aware of the program	17	(6.4)	118	(23.4)	<0.0001
No time	71	(26.8)	77	(15.2)	0.0001
No interest	17	(6.4)	25	(5.0)	0.3952
Outside benefit program	8	(3.0)	41	(8.1)	0.0059
Incentive not motivating enough	13	(4.9)	16	(3.2)	0.2289
Concern over the confidentiality of my personal health information	13	(4.9)	34	(6.7)	0.3144
Don't understand how the program works	41	(15.5)	115	(22.8)	0.0166
Already healthy and fit; no need the information	14	(5.3)	35	(6.9)	0.3735
Other	69	(26.0)	112	(22.2)	0.2302

compared to the HRA + group (1.6%). By the posttest, participants in the HRA+ group were 7.4 (95% CI 5.931 – 9.221) times more likely to have increased their consumption of fruits and vegetables (a 53% increase from the pretest mean level of only 3.0 to a posttest mean of 4.8) as compared to a 13.7% in the HRA only group from the pretest mean level of only 4.2 to a posttest mean of 4.9. Hence, the Cohen's *d* effect sizes for mean pre- to posttest improvements were five times larger for the HRA+ group compared to the HRA only group ($d = .86$ vs. $d = .17$). See Table 4.4

Sugary Beverages. At intake or pretests, the HRA + group reported consuming an average of almost twice as many sugary beverages per day compared to the HRA only group—mean number was 1.5 vs. .80 sugary beverages per day. The Cohen's *d* effect sizes for mean pre- to posttest improvements were more than three times larger for the HRA+ group compared to the HRA only group ($d = .55$ vs. $d = .17$) (Table 4.3). Participants in the HRA+ group had a 4.23 (95% CI 3.308-5.425) times greater likelihood of reporting a decrease in sugary beverage consumption as compared to the HRA only (32.2% decrease vs. 10.8%, respectively). Both groups had a significant decrease in the consumption of sugary beverages ($p = <0.0001$). See Table 4.4

Table 4.3 shows the effects of changes in behavior for both the HRA and HRA+ groups for each of the behavioral categories examined: physical activity, consumption of fruits and vegetables, and the consumption of sugary drinks. Table 4.4 shows the changes in health behaviors from pre- to post participation for both groups.

Health Status. A scale of 1–100 was used to self-report health status, 1 = poor health, 100 = excellent health. Those who chose to participate in the HRA only had fewer self-reported pretest risk factors at the outset of the program and reported a higher health status

(80.7 ± 16.4) than those participating in HRA+ (66.1 ± 17.6 , $p = <0.0001$). The improvement in health status of the HRA only participants was minimal (a small effect size of $d = 0.10$) with an increase of 2.3 points whereas participants of HRA+ reported a significant improvement in health status (Mean 66.1 ± 17.6 to 77.8 ± 14.3). Differences between HRA only and HRA+ in health status before the program was high (effect size, $d = .86$) and lower at posttest (effect size $d = .30$).

BMI. Reported BMI was higher among the HRA+ at both pretest and posttest ($p = <0.0001$, effect size was medium at the pretest $d = .65$ and $d = 0.48$ at posttest) despite a significant decrease in BMI among the HRA+ group (28 to 26.7, $p = <0.0001$). There was no change in BMI in the HRA only group ($p = <0.3354$, small effect size $d = 0.01$) from pretest to posttest.

Stress Levels. Both groups reported higher stress level at the posttest with no significant difference ($p = 0.6503$) between groups on self-reported stress levels, On a scale of 1 – 100, 1= low stress, 100= high stress, HRA only reported a mean of 72.5 ± 16.9 and HRA+ reported a mean of 72.1 ± 19.2 . However, the HRA+ group reported significantly less stress ($p = <0.0001$) at the pretest with a mean of 60.3 ± 22 on a scale of 1- 100 than HRA only with a mean of 69.1 ± 20.6 . The ANOVA reporting pre- to posttest changes within the HRA only group presented a small effect size of $d = 0.15$. The between group change in stress was moderate at the pretest and low at the posttest (effect size $d = .44$ and $d = 0.02$ respectively).

Cholesterol Levels. Participants in the HRA+ group reported a significant decrease in cholesterol levels ($p = <0.0001$) and were 4.817 (95% CI 3.481 – 6.666) times more likely to report a decrease in cholesterol than the HRA only group. At the outset of the program

68% of HRA only group and 53.7% of the HRA + group reported normal or low cholesterol levels. These percentages improved significantly to 70.5% of the HRA only group and 69.8% of the HRA + group reporting normal to low cholesterol levels.

Table 4.3: The effect of the change from pre to posttest within each group for all participants

HRA only <i>Total n=851</i>	Pretest			Posttest			Change	Paired t-test <i>p</i>	Cohen's <i>d</i>
	<i>n</i>	<i>mean</i>	<i>SD</i>	<i>n</i>	<i>mean</i>	<i>SD</i>			
Physical activity	792	3.7	2.0	791	3.9	2.0	0.07	<0.0001	0.10
Fruit and vegetable	785	4.5	2.4	787	4.9	2.4	0.14	<0.0001	0.17
Sugary beverage drinking	787	0.9	1.3	792	0.7	1.0	-0.12	<0.0001	0.17
HRA + WellU <i>Total n=2518</i>	Pretest			Posttest			Change	Paired t-test <i>p</i>	Cohen's <i>d</i>
	<i>n</i>	<i>mean</i>	<i>SD</i>	<i>n</i>	<i>mean</i>	<i>SD</i>			
Physical activity	2326	2.1	1.7	2324	3.9	1.6	0.90	<0.0001	1.09
Fruit and vegetable	2316	3.0	2.1	2326	4.8	2.1	0.61	<0.0001	0.86
Sugary beverage drinking	2312	1.5	1.6	2324	0.8	1.0	-0.39	<0.0001	0.52

Table 4.4: Changes in health behaviors from pre- to post participation

Changes in behavior	Times per week	Changes			Effect size	Man-Whitney <i>p</i> value	
		Level	HRA n (%)	HRA+ n (%)	Odds ratio with 95% CI		
Physical activity	0-1	-1(Decreased)	38 (4.8)	35 (1.5)	0.937 (0.584-1.501)	<0.0001	
	2-3	0(no changes)	663 (84)	652 (28.1)	Reference group		
	4-5	1(increased)	88 (11.2)	1631 (70.4)	18.844 (14.821-23.960)		
	6-7	Note: * those participants whose behavior change increased in physical activity are the odds of 18.844 times more likely to be in the HRA+ WellU					
Fruits and vegetables	0-2	-1(Decreased)	7 (0.9)	7 (0.3)	0.631 (0.220-1.807)	<0.0001	
	3-5	0(no changes)	669 (85.5)	1060 (45.9)	Reference group		
	6-8	1(increased)	106 (13.6)	1242 (53.8)	7.395 (5.931-9.221)		
	9+	Note: * those participants whose behavior change increased in V&F are the odds of 7.395 times more likely to be in the HRA+ WellU					
Sugary beverage consumption	0	-1(Decreased)	80 (10.2)	742 (32.2)	4.236 (3.308-5.425)	<0.0001	
	1-2	0(no changes)	702 (89.2)	1537 (66.8)	Reference group		
	3-4	1(increased)	5 (0.6)	23 (1)	2.101 (0.795-5.549)		
	5-6	Note: * those participants whose behavior change decreased in sugary beverage drinking are the odds of 4.236 times more likely to be in the HRA+ WellU					
	7+						

Table 4.5: The effect of the change from pre- to posttest within each group:
lowest self-reported health status < 25 percentile (<60)

HRA only		Pretest			Posttest			Paired	
Total n=75	<i>n</i>	mean	SD	<i>n</i>	mean	SD	Change	t-test <i>p</i>	Cohen's <i>d</i>
Health Status	75	42.57	12.93	73	48.10	16.32	5.26	0.0027	0.38
BMI	49	29.40	6.14	50	29.01	5.47	-0.43	0.4323	0.067
Stress	65	48.65	22.20	65	53.23	19.51	4.58	0.0436	0.22
HRA + WellU		Pretest			Posttest			Paired	
Total n=634	<i>n</i>	mean	SD	<i>n</i>	mean	SD	Change	t-test <i>p</i>	Cohen's <i>d</i>
Health Status	634	43.13	10.84	604	63.75	15.33	20.23	<0.0001	1.55
BMI	377	32.30	7.82	380	29.93	7.22	-2.39	<0.0001	0.31
Stress	569	49.09	21.95	582	65.07	17.52	15.16	<0.0001	0.80

Risk Levels - Health Outcomes and Behavior Change

Lowest self-reported health status. Using pre- posttest health outcomes data, those in the lowest 25th percentile of self-reported health status, HRA + reported the most significant improvement of 20.23%; $d = 1.55$ over those in the HRA only group at 5.26%; $d = 0.38$. The lowest quartile group in HRA + dropped an average of 2.39 points in BMI ($p = <0.0001$; $d = 0.31$) while the HRA only did not change significantly in BMI ($p = .4323$; $d = 0.06$). Both groups reported a significant increase in stress levels HRA only ($p = 0.0436$; $d = .22$) and HRA+ ($p = <0.0001$; $d = .80$). Those reporting a decrease in cholesterol levels were 2.99 (95% CI 1.445 – 6.184) times more likely to be in the HRA+ group (Table 4.5).

Highest self-reported health status. Those in the highest 25% reporting the highest health status, reported smaller improvements in health status with significant change only among those in the HRA+ group (2.75% in HRA+ $p = <0.0001$, $d = .55$; 0.24% HRA only $p = 0.0976$, $d = 0.04$). BMI dropped 3.8% for the HRA+ group and was significant at $p = 0.0002$, $d = 0.1$. The change in BMI in the HRA only group was not significant, $p = 0.335$,

Table 4.6: The effect of the change from pre- to posttest within each group: highest self-reported health status ≥ 75 percentile (≥ 84)

HRA only <i>Total n=410</i>	n	Pretest mean	SD	n	Posttest mean	SD	Change	Paired t-test p	Cohen's d
Health Status	410	91.86	4.92	409	92.09	5.40	0.24	0.0976	0.04
BMI	314	22.67	2.85	341	22.59	2.95	-0.08	0.3351	0.028
Stress	378	74.56	18.60	376	77.11	17.20	2.45	<0.0001	0.14
HRA + WellU <i>Total n=351</i>	n	Pretest mean	SD	n	Posttest mean	SD	Change	Paired t-test p	Cohen's d
Health Status	351	88.87	3.98	351	91.62	5.81	2.75	<0.0001	0.55
BMI	219	24.29	3.80	223	23.88	3.80	-0.38	0.0002	0.11
Stress	320	73.40	18.83	326	79.71	15.63	6.46	<0.0001	0.36

$d = 0.02$. A significant number of participants with the highest self-reported health status ($p = 0.0011$) showed a decrease in cholesterol levels with those in the HRA+ group demonstrating a 3.64 (95% CI 2.040 – 6.492) times greater likelihood of achieving this behavior change. The highest quartile group maintained significantly higher levels of stress both pre- and posttest (HRA only $p = <0.0001$; $d = .14$; HRA+ $p = <0.0001$; $d = 0.36$). See Table 4.6.

Behavior Changes

Lowest self-reported health status. Those in the lowest quartile for health status had a significant increase in physical activity and increased consumption and fruits and vegetables ($p = <0.0001$). Participants in the HRA+ group had a 23.82 times greater likelihood of increasing their physical activity and a 17.90 greater likelihood of increasing their intake of fruits and vegetables. Intake of sugary beverages decreased to less than 2 per day ($p = 0.0002$) and those in the HRA+ group were 3.36, 95% (95% CI 1.1831-6.164) times more likely to decrease their intake of sugary beverages than the HRA only group.

Highest self-reported health status. Participants at the highest quartile for health status still reported a significant increase in physical activity and daily intake of fruits and vegetables. Those in the HRA+ were 14.70 (95% CI 9.405-22.969) times more likely to make changes in physical activity and 5.47 (95% CI 3.766 -7.919) times more likely to have increased their consumption of fruits and vegetables. This trend remained consistent, with the HRA+ group 2.74 (95% CI 1.700-4.408) times more likely to have a decrease in daily intake of sugary beverages.

Age Group Comparisons

There was no significant difference in physical activity ($p = .909$) or sugary beverage consumption ($p = 0.832$) across 10-year age groups, however there was an increase ($p = .050$) in consumption of fruits and vegetables with age. A decrease ($p = 0.0001$) in cholesterol levels was evident in the older age groups.

Years of Enrollment Comparison

A subgroup analysis was conducted to determine if the number of years of enrollment in the WellU program had an impact on health and behavior change outcomes.

Participants, both HRA only and HRA +, were partitioned into those who had been in the program for only one year vs. all 5 years. Overall, those who have participated in WellU for all 5 years showed a significant level of improved health outcomes ($p = <0.0001$) across the outcome variables of self-reported health status, BMI and cholesterol.

Participants with a longer duration of participation reported greater behavior change than those with shorter duration of participation. Those participating all 5 years were 1.37 (95% CI 1.11 -1.68) times more likely to have increased physical activity at a significance of $p =$

0.0031; 1.95 (95% CI 1.57 – 2.41) times more likely to increase daily intake of fruits and vegetables ($p = <0.0001$) and 1.58 (95% CI 1.23 – 2.02) time more likely to decrease daily intake of sugary beverages ($p = 0.0008$). There was also a significant difference in stress levels with those who have participated all 5 years reporting higher levels of stress ($p = <0.0001$). However both groups reported an increase those in the WellU for one year reported a 7.35% increase, and those who had participated in WellU for all 5 years reported a 10.87% increase.

Comparisons between WellU Participants and the Never Enrolled

Current health Status, health parameters and behaviors were reported by all three groups, HRA only, HRA + wellness and never or not enrolled. There was a significant difference between these groups ($p = <0.0001$) with the HRA only group reporting better health status, lower BMI. The never enrolled group reported significantly lower levels of stress than the two participant groups. There was no significant difference in levels of physical activity among the three groups ($p = 0.1178$), however there was a significant difference in fruits and vegetable consumption with the never enrolled group reporting consuming less fruits and vegetables on a daily basis than the two participant groups. There was a significant difference in reported cholesterol levels ($p = 0.0069$) notably, nearly one third of the nonenrolled employees did not know their cholesterol level (Table 4.7 and 4.8).

Current Health Behavior Patterns

The self-reported current health risk behaviors identified by the sample population (Table 4.9) somewhat reflect the state averages with just below 10% reporting that they

currently smoke. Although there are significant differences between participants and those who have not enrolled in WellU in the consumption of fruits and vegetables, sugary beverages and exercise levels, the population as a whole shows tendencies towards maintaining low risk healthy behaviors.

Table 4.7: Participant and nonenrolled ratings of health status, BMI and stress at posttest
The effect of the outcomes among three groups with Cohen's *d*

Outcomes	<i>n</i>	HRA Mean (\pm SD)	HRA plus any wellness activities		Never enrolled		ANOVA <i>p</i> value	Cohen's <i>d</i>
			<i>n</i>	Mean (\pm SD)	<i>n</i>	Mean (\pm SD)		
Health status	761	82.3 (\pm 15.5)	2271	77.8 (\pm 14.3)	467	75.7 (\pm 18.4)	<0.0001	0.02
BMI	561	24.16 (\pm 4.60)	1501	26.75 (\pm 5.99)	380	26.44 (\pm 6.14)	<0.0001	0.03
Stress	685	72.1 (\pm 19.2)	2144	72.5 (\pm 16.9)	450	63.6 (\pm 22.0)	<0.0001	0.03

Table 4.8: Participants and nonenrolled ratings of behavior change and Cholesterol level at posttest

Behavior	Answer	Participants HRA		HRA plus any wellness activities		Never enrolled		Kruskal-Wallis <i>p</i> value
		<i>n</i>	(%)	<i>n</i>	(%)	<i>n</i>	(%)	
Physical activity	0-1	113	(14.3)	122	(5.2)	54	(11)	0.1178
	2-3	199	(25.2)	833	(35.8)	115	(23.4)	
	>3	479	(60.6)	1369	(58.9)	322	(65.6)	
Nutrition	0-2	128	(16.3)	277	(11.9)	165	(33.8)	<0.0001
	3-5	335	(42.6)	1223	(52.6)	246	(50.4)	
	6-8	291	(37)	752	(32.3)	72	(14.8)	
	9+	33	(4.2)	74	(3.2)	5	(1)	
Cholesterol	Low <150	171	(22.6)	360	(16.3)	95	(20.4)	0.0069
	Normal <200	362	(47.9)	1183	(53.5)	187	(40.2)	
	Borderline high <240	58	(7.7)	240	(10.9)	47	(10.1)	
	High >240	9	(1.2)	28	(1.3)	7	(1.5)	
	Don't know	155	(20.5)	400	(18.1)	129	(27.7)	

Table 4.9: Current behavior patterns of University of Utah employees enrolled in WellU and never enrolled.

Behavior	Answer	Participants HRA		HRA plus any wellness activities		Never enrolled		Kruskal-Wallis <i>p</i> value
		<i>n</i> =	(%)	<i>n</i> =	(%)	<i>n</i> =	(%)	
Don't smoke	Yes	769	(90.4)	2229	(88.5)	456	(90.3)	0.2220*
Less than 7 alcoholic beverages per week	Yes	681	(80)	1994	(79.2)	397	(78.6)	0.8046*
Less than 1 sugary beverage	Yes	680	(79.9)	1985	(78.8)	347	(68.7)	<0.0001*
Seat belt at least 80%	Yes	770	(90.5)	2258	(89.7)	468	(92.7)	0.1126*
Exercise at least 3 times per week	Yes	600	(70.5)	1697	(67.4)	312	(61.8)	0.0041*
At least 6-8 servings of fruits and vegetables each day	Yes	371	(43.6)	990	(39.3)	109	(21.6)	<0.0001*

Awareness of Health Risks

Health Risk Appraisals (HRAs) are one way to make individuals aware of their current or potential health risks. It is surmised that, once aware, individuals will make an effort to change behaviors to mitigate these risks. Table 4.10 shows the health risks of employees at the University of Utah, as taken from the HRA and Table 4.11 shows the subsequent behavior changes that were made.

Table 4.10: Risk factor awareness as a result of the HRA

Risk factor	HRA only		HRA+		Chi ² <i>p</i> value
	<i>n</i> =	(%)	<i>n</i> =	(%)	
Cardiovascular disease	5	(6.46)	1894	(75)	<0.0001
Diabetes	44	(5.17)	494	(19.62)	<0.0001
Cancer	17	(2)	126	(5)	0.0002
Stroke	20	(2.35)	148	(5.88)	<0.0001
Stress related illness	68	(7.99)	608	(24.15)	<0.0001
Accidental death	6	(.71)	21	(.83)	0.7153
Do not remember	100	(11.75)	247	(9.81)	0.1072
I have no health risks	540	(63.45)	793	(31.49)	<0.0001
other	37	(4.35)	207	(8.22)	0.0002

Table 4.11: Behaviors changed as a result of the WellU program

Behavior change	HRA only		HRA+		Chi ² p value
	n=	(%)	n=	(%)	
Quit smoking	4	(.41)	48	(1.91)	0.0033
Started a regular ex program	35	(4.1)	1160	(46)	<0.0001
Lost weight	55	(6.46)	1122	(44.56)	<0.0001
Lowered blood pressure	17	(2.00)	461	(18.31)	<0.0001
Fasten seat belt at least 80%	24	(2.41)	288	(11.44)	<0.0001
Preventive screenings	49	(5.76)	579	(22.99)	<0.0001
Improved eating habits	128	(15)	588	(63)	<0.0001
Managing stress	71	(8.34)	821	(32.61)	<0.0001
Decreased smoking	21	(2.47)	95	(3.77)	0.0710
Increased exercise level or intensity	3	(.35)	49	(1.95)	0.011
Not applicable	77	(9.05)	1135	(45.08)	<0.0001
Other	557	(65.45)	94	(3.73)	<0.0001

Discussion

The WellU program was started with the objective to increase awareness of personal health and well-being for university employees, with the hope that, once aware, employees would make changes toward healthier behaviors (Gines, October 2009). In light of this overall objective, the purpose of this research was to conduct a process and outcome evaluation of the program to determine the efficacy of the Health Risk Appraisal (HRA) in facilitating improved health behaviors in university employees. In addition, this research sought to determine the factors that motivated current benefits eligible University of Utah (U of U) employees to participate in the WellU program and determine the barriers that benefit-eligible employees use as rationale for not participating in the WellU program.

Motivations and Barriers

At 58%, the WellU program enjoys a higher level of participation than most worksite wellness programs which average between 25% and 50% (Olsen & Chaney, 2009; Robroek, van Lenthe, van Empelen, & Burdorf, 2009). The overwhelming majority of respondents supported the hypothesis that the monthly discount of \$40 for health insurance was an incentive. Learning more about their health was also of interest to 18.4 %; in this case, some people chose more than one answer to the question “What was your primary reason for participating in WellU?”

Although the incentive drove much of the participation, the program results demonstrate it was effective in facilitating behavior change. What would happen if the incentive were removed, would employees still take part in the WellU program? This is the looming debate around external vs. internal incentivizing toward behavior changes. With extrinsic motivators present, individual behavior changes are thought to result from the value placed on the extrinsic motivator and will not become internalized and thus be less likely to result in lasting behavior change (Seaverson, Grossmeier, Miller, & Anderson, 2009). But to the contrary, some literature supports that after experiencing success in a behavior change, and after making his change part of the persons habits, the motivation to stay engaged in that healthy behavior becomes internal. According to the self-determination theory, when three innate psychological needs, competence, self-regulation and relatedness are met, intrinsic motivation will result (Ryan & Deci, 2000). Both extrinsic and intrinsic motivators are beneficial and necessary to engage employees in making long-term behavior change; however intrinsic motivation is critical to lasting behavior change (Bénabou & Tirole, 2003). More research is needed in this area.

Of those who are not enrolled in the WellU program, nearly half expressed concerns around communication about the program either lack of awareness or failure to understand how the program works. One of the key elements to successful WHP programs is communication before during and after enrollment. Strong and consistent communication at the outset of a program has been shown to drive participation rates up to 90% (Pronk, 2010). Communication about program elements and how to enroll are as important as communicating the corporate cultural messages around the support and encouragement to participate in a WHP program (Olsen & Chaney, 2009). Senior management plays an important role in communicating these messages to employees and walking the talk by participating themselves (Pronk, 2010). Lack of time ranked third at 15.2% as a barrier to participation, which is well supported by the literature (Ball, 2009; Olsen & Chaney, 2009). A smaller percentage (6.7%) had a concern over confidentiality. This issue presented a greater concern for those who participated in the previously conducted focus groups.

Perceived barriers to participation in WHP programs can be explained by the health belief model, a model to explain health behaviors (Janz & Becker, 1984). There are the perceived costs of time and money, not perceiving the benefits, as well as perceived susceptibility, not feeling the need. The other reasons for failing to enroll in the first place most likely are the result of one of these perceptions (Janz & Becker, 1984; Olsen & Chaney, 2009).

This highly incentivized program carves into to a population that typically has a low intention of changing behavior. Programs planners of WHP would plan with the expectation that 10% of the population will be active regardless; 30% will be active when

adding in the convenience factor (removing time barrier), offering an incentive or developing a sense of self-efficacy; and 60% of the population representing the challenge of enrollment in the program. Once enrolled in a program however, Robreck and associates found that those with low intention to change behavior were more likely to sustain participation (Robreck, Lindebloom, & Burdorf, 2012). They also determined that those starting with the unhealthiest behaviors were less likely to sustain behavior change. At this 5-year mark, long-term adherence to the WellU program does not appear to pose a concern. Overall however, lack of adherence to behavior changes long-term can be a challenge (Oskene, Hayman, Paternak, Schron, & Dunbar-Jacob, 2002). What follows is a discussion around the behavior change and health status outcomes in the pre- and posttest assessments for the WellU program identifying significant and lasting improvements overall.

Behavior Change and Health Outcomes

Utah ranks in the top 10 healthiest states at 7th overall (Americas Health Rankings, 2011). The university employee population mostly reflects that healthy status and in some cases report better health overall than the averages in the state. More than 60 % of all three groups in this study report exercising an average of 3 + times per week. This mirrors the Utah state average of 58.7% of males and 56.6% of females who get the recommended 3+ times per week of physical activity (2011 Utah State Health Profile, 2012).

The *State Indicator Report on Fruits and Vegetables, 2009* provides state-by-state levels of consumption of fruits and vegetables and compares this to the objectives set forth in Healthy People 2010 (State Indicator Report on Fruits and Vegetables, 2009). It is widely known that fruits and vegetables are an important part of a healthy diet, valuable

sources of nutrients, weight management, and chronic disease prevention (Kader, Perkins-Veazie, & Lester). There was a significant difference ($p = <0.0001$) in consumption of fruits and vegetables with nonenrolled employees, who report significantly lower levels of the desired six to eight servings per day. According to the *State Indicator Report on Fruits and Vegetables, 2009*, the proportion of adults in Utah who report consuming two or more servings of fruit per day is 32.8. A smaller proportion of adults report consuming three or more servings of vegetables (27.4) and a surprisingly small number of adults, (14.0) report consuming adequate amounts of both fruits and vegetables. Over 99% of both the HRA only and HRA+ groups report consuming more than three fruits and vegetables per day, which is higher than the amounts reported by the general population in the state of Utah (State Indicator Report on Fruits and Vegetables, 2009). In some cases however, people tend to over report their consumption of fruits and vegetables because they know they should eat them.

The State of Utah adult overweight and obesity levels presently report that 59.9% of adults are overweight with a BMI of 25 or greater and 22.5% of adults are obese with a BMI of 30 or greater (CDC Behavioral Risk Factor Surveillance System: Prevalence and Trend Data – Overweight and Obesity, US Obesity Trends, Trends by State 2010. , 2012). The average BMI of WellU+ and Non-enrollees (26.75 and 26.44 respectively) still exceed the level designated as overweight; however, the HRA only group, with a mean of 24.16, fall into the normal weight category of 24.9 and below.

Health parameters. The HRA only group (20.57% of the sample total) appeared to be healthier at the outset of the program, and maintained their healthy behaviors throughout the 5-year study. A significantly higher number of nonenrolled employees did not know

their cholesterol level, compared to WellU participants. This makes sense since these individuals most likely have not participated in biometric screening and are not engaging in annual physicals. The BMI level of WellU+ and nonenrolled participants were similar (HRA+ = 26.75; nonenrolled = 26.44). The HRA only group did not experience a drop in BMI, but they started at a significantly lower level of BMI than the HRA+ group. There was also a significant difference in health status with the HRA only group, who reported a higher level of health status than the other two groups. The HRA only group appeared to be healthier at the outset of the program, and maintained their healthy behaviors throughout the 5-year study. Based on the number of responses this group represents 20.57% of the sample total.

Stress levels were reported by the HRA only and HRA+ groups at pre- and posttest levels and, although the HRA only group reported a significantly higher level of stress at the pretest ($p = <0.0001$), they showed no significant difference between these two group at posttest ($p = 0.4620$). This was the only variable to show no improvement with stress levels rising from a mean of 69.1 to 72.1 for HRA only; 60.3 to 72.5 for HRA+.

These figures are close to what is being reported nationwide as close to 75% of American workers are reporting high stress levels at work. These numbers could be the result of the economic downturn and layoffs resulting in those who are still employed carrying heavier workloads, working longer hours and worrying about job security. Stress, more so than diet and exercise, has been identified as the number one risk factor for cardiovascular disease and other chronic disease states as well as contributing to workplace safety issues, conflict, and presenteeism. This is an area where the University of Utah could benefit from more investigation and potential programming solutions.

Subgroup Analysis

The 25% reporting the lowest health status improved their health status and made more significant behavior changes from pre- to posttest. Participants reporting the highest level of health status also reported significant improvement overall. With the exception of BMI (BMI did not change significantly in either high or low risk groups for HRA only participant's) improvements in health status and behavior change for both groups were significant. These results are consistent with the behavior changes reported as a result of the program.

The trends in the industry are turning focus towards keeping the healthy population healthy. Prevention is the key to long-term health care cost containment as well as the improved health and productivity of an employee base. With 80 % of the population falling into the medium to low risk categories, the goal of the employer should be to maintain the status quo. Dr. Dee Edington, in his book *Zero Trends*, discusses this strategy and identifies how keeping healthy employees healthy will make a significant long-term reduction in the cost of healthcare and other health related expenses, such as absenteeism, presenteeism and other indirect costs (Edington, 2009)

Health risks and resulting chronic conditions increase with age. The US Department of Health and Human Services report entitled *Health, United States, 2011* shows that 16% of adults in the highest economic categories, over the age of 45, have 2 or more chronic conditions which share a “common set of modifiable risk factors” with that level increasing to 33% for those at the lowest economic levels (Health, United States, 2011, 2012). The average age of responders to the WellU survey was 43.49.

Years of enrollment. Studies looking at longitudinal data in worksite wellness are limited (Hyatt-Neville, Merrill, & Kumpher, 2010). This study supports the notion that the more years of exposure the employee has with a workplace wellness program the more likely lasting behavior changes will result. Significance in all parameters of health behavior change, health status and outcomes showed more improvement for those in the program all 5 years vs. 1 year.

Conclusion

The University of Utah's WellU program is working. The incentive was successful in attracting enrollment and the HRA was an effective tool in making employees more aware of their health risks resulting in significant self-motivated behavior change. The benefits integrated incentive helps to keep program costs down. This program has evolved over the past 5 years to include a change in HRA vendor, change the mandatory inclusion of biometric screening and this year a requirement to participate in at least two wellness program options. Increasing the level of wellness activities should also increase the positive results the program is generating.

A university campus employee population represents a large and diverse target. Implementing a wellness program in this environment poses significant challenges. The WellU program has addressed these challenges with a multitude of program participation options which will, with hope, allow this program to continue with the significant results it has been experiencing thus far.

Limitations

Survey Design and Response. The survey needed to be designed to measure the effects of this specific program and therefore preexisting validated survey tools were not as easily modified to use. Bias towards what the responders to the survey thinks the investigator is looking for may have slanted the results positively if the employee thought this might affect the continuation of the program. The survey asked for specific quantitative answers limiting the responders' option to include responses that were not part of the selections.

Design. It was determined at the outset that a retrospective pre- posttest would provide the best assessment of the WellU program effectiveness historically. Responders' are asked to rate their current knowledge, skill, attitude, behavior presently as a result of the program and to reflect back and rate that same knowledge, skill, attitude, behavior before participating in the program (Lamb, 2005). Although there are limits to this type of design to include self-reported memory of the participant at the time of the pretest, it is still a popular way to assess learners' self-reported changes in knowledge, awareness, skills, confidence, attitudes or behaviors (Lamb, 2005; Pratt, et al., 2000). Since it is a single survey, it takes less time than the standard pre-posttest design. Because all information is collected from the subjects at one time, it also deals with the internal validity issues of mortality and testing bias. Another advantage is that it can be used to collect longitudinal retrospective pretest data for a program evaluation when the program had no regular pretest.

Additional Analyses

Because of the large sample size, this is a rich data set with several opportunities for many more subgroup comparisons to better answer the research question for which types

of employees was the program more effective. More detailed subgroup analyses are planned for race, education levels, job description and location on campus (which has an impact on accessibility to facilities). Qualitative responses were captured at the end of the survey and will also be analyzed for a subsequent article. Future research might look at a cost benefit analyses of this program. Research to determine what is driving the high reported stress levels which increased from the pre- to posttest regardless of the employee's participation in increased healthy activities may also be beneficial for the university human resources department to examine in the future.

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Appendix – Cover letter

The University Of Utah Division Of Human Resources is partnering with the Department of Health Education and Promotion to conduct a study to measure the outcomes of the 5-year University of Utah's **WellU** program in facilitating employees' behavior changes and promoting healthier lifestyles.

Below is a link to an online survey being sent to all benefit-eligible University of Utah employees. **Your input on this survey is very valuable and important, regardless of whether you are participating in WellU.** Your answers and opinions will assist the university in providing a meaningful and effective employee health promotion program.

As an incentive to complete this short online survey, you can enter a drawing to win prizes including a free weekend at a 3-bedroom Alta cabin, a 4-bedroom home in Springdale (Zion National Park), an I-Pad, or one of 8 \$25 gift cards. After you complete the survey you will be directed to an independent link to enter your contact information. Complete this information if you want to enter the drawing for these prizes.

There is no identifying information on this survey. All responses are anonymous and totally confidential. The Principal Investigator and her statistical team will analyze the de-identified data and only aggregate results will be reported. Please click on the link below to access this on-line survey.

It should take 5 to 10 minutes to complete the questionnaire. Participation in this study is voluntary. You can choose not to take part. You can choose not to finish the questionnaire or omit any question you prefer not to answer without penalty or loss of benefits.

By returning this questionnaire, you are giving your consent to participate in this research. You may open the survey in your web browser by clicking the link below: [WellU Survey](#)

If the link above does not work, try copying the link below into your web browser:

<https://marlin.med.utah.edu/ccts/prod/redcap/surveys/?s=NI6ZSt>

If you have any questions, complaints or if you feel you have been harmed by this research, please contact the PI, Dee Hill-Mey, M.S., Doctoral Candidate, Department of Health Promotion and Education, dee.hill-mey@utah.edu.

Contact the Institutional Review Board (IRB) if you have questions regarding your rights as a research participant. Also, contact the IRB if you have questions, complaints or concerns that you do not feel you can discuss with the investigator. The University of Utah IRB may be reached by phone at (801) 581-3655 or by e-mail at irb@hsc.utah.edu.

Thank you for your time and effort to complete this survey and contribute to the strength and effectiveness of the university's employee wellness program!

CHAPTER 5

SUMMARY AND CONCLUSIONS

Introduction

Chronic diseases cause 70% of the deaths in the US each year. Additionally, they limit activities of daily living in 1 out of every 10 Americans. Most of these chronic conditions can be avoided or delayed by knowing which behaviors put one at risk and making efforts to changes risky and unhealthy behaviors. Although we have learned much about the cause and effect of our behaviors, the obesity rate in the US continues to rise, one in five Americans continue to smoke cigarettes, and a small percentage of Americans are adhering to healthy lifestyles that include regular exercise and a healthy diet (Clark, 2010).

Our present-day medical system is more oriented toward treating the symptoms and not the cause of our health problems. Consumers bear the burden of the cost of preventive care in most cases, with insurance or Medicare offering limited coverage for preventive screenings and annual physicals, The US has the most expensive health care system in the world, yet our outcomes fall well behind (Murray, Phil, & Frenk, 2010).

As a nation, we are beginning to recognize the importance of maintaining our health. Individuals are assuming more financial responsibly for their health care in increased premiums and co-pays which can become a motivator. People are living longer and the ability to enjoy a happier and more active life into retirement is also becoming a motivation to maintain good health. The trends of keeping healthy people healthy are taking precedent over strictly targeting the unhealthiest 20% of the population. Programs to identify and mitigate potential health risks can be very effective toward minimizing the onset of chronic disease in an aging workforce.

Health education starts in the schools however health and physical education classes have experienced significant cut backs in the past few decades. Although physicians might

encourage behavior changes and risk reduction, in most cases they do not have the time or training to educate patients on how to go about making the necessary changes. There is a growing interest in health and well-being and individuals/consumers are seeking out ways to improve and maintain personal health.

Worksite health promotion is one of the vehicles through which knowledge and skills can be taught. The employed adult American population spends on average 43 hour per week at the workplace. Time, culture, peer support, management support; the ability to provide materials, motivation and skills training can make a big impact on the health of employees and bottom line of an employer. Research is available to support the efficacy of worksite health promotion in terms both direct (health care costs and works compensation costs) and indirect (absenteeism, retention and presenteeism).

As indicated in the research and in the results of this study, the Health Risk Appraisal (HRA) in WHP programs is an effective tool for making employees more aware of their health risks resulting in significant self-motivated behavior change. Awareness alone does not change behavior; skill (self-efficacy) and the proper motivation all contribute to successful behavior change (Fogg, 2010). The use of incentives was significant in generating a higher than average enrollment in this program. This raises the question, *if the incentive goes away will enrollment diminish?* The key question with the use of external incentives is the lasting result of the behavior change.

Declining states of health resulting in chronic disease in the U.S. population is contributing to this nation's health care crisis. This decline in our health is being driven foremost by lack of exercise and proper nutrition. Health promotion and education can have a significant impact on these behaviors.

Outcomes of WellU Research

Conclusions supported the hypothesis that the incentives played a major role in participation. Consistent with the literature, the main barriers to participation were time and lack of communication/understanding about the program. One barrier not addressed in the literature that surfaced as a concern was the perceived threats to confidentiality. Although a third-party vendor administered the HRA, employees still felt that their personal information could and would be accessed by the university.

The impact of this program on actual behavior change as self-reported by focus group participants as well as survey responses was positive. The focus groups conducted in 2010 reported that the greatest motivation to change was as a result of the biometric screening rather than the HRA report. These implications show that the physical data make a difference and that now that biometrics are not part of a program, employees should be encouraged to request preventive screening with their personal physician.

Survey respondents who were participants of WellU were grouped into two categories, those participating in the HRA only and those who both completed the HRA and took part in other wellness activities either within WellU or their community. The HRA only group had a significantly higher self-reported health status and health behaviors than the HRA+ wellness group. This group also made fewer behavior changes and reported to participate in fewer wellness activities. Because they started at a higher level of health, they had fewer changes to make. Overall, the reported behavior changes are significant and impressive, indicating this program is achieving its goal.

Participants in the focus groups commented that the program provided very little encouragement to pursue healthy activities throughout the year. However, with the recent

changes in the program to mandate participation in at least two wellness activities through the year, this message is changing.

Communication strategies for the program lack some effectiveness; this being the primary reason nonparticipants are not enrolled. All benefits-eligible employees qualify to be part of this program; however, there was confusion about who qualified for the WellU program and its activities, which impacted participation. The lesson here would be to focus more effort into communication strategies, monitoring, and follow-up to encourage participation.

Incentives were a strong motivating factor to participation. Fifty percent in the focus groups and 97% of survey respondents said they were motivated only or primarily by the incentive. It was determined that the generous incentive of \$40 discount on monthly insurance premium was motivating and effective towards attracting employees to the program and maintaining a high level of involvement across the 5-year period. As an additional investigation, it would be interesting to compare changes in behaviors and health risks by those motivated only by the money, to those motivated by the desire to learn more about their health risks. Further investigation could also explore how much of an incentive would be needed to prompt participation, and if no incentive were offered would they have participated.

The barriers that are inhibiting participation in the WellU program include communication and time issues. A university setting poses an interesting challenge with a large, spread out campus; colleges and departments, which operate nearly autonomously; and a large and diverse employee base. The challenge of time is pervasive across all

industries, our busy lives, work demands, family commitments, often both parents working; taking time to take care of oneself often takes a back seat.

By industry standards, the participation rates in this program, which hovered between 60% - 65% over its 5-year duration, are high. The average rate of participation in exemplary programs is 60% (Goetzel & Ozminkowski, 2008). In this case, participation is defined by enrollment in the program, taking the HRA, and in years 2 and 3, participating in the biometric screenings.

Other interesting observations include gender, ethnicity and employment status demographic of those who responded to the survey. More women than men participated in the survey. Of the 6,030 enrolled employees, 60% are female, 40% male. Of those who responded to the survey 64% were female a slightly higher representation than males. . Eighty percent of those enrolled in WellU are Caucasian and 85% of those who responded to the survey were Caucasian. Overall, the demographics of the respondents aligns somewhat closely with the actual demographics of the university population with members from every ethnic group responding. Faculty comprises 25% of the eligible population and 18% of the respondents were faculty. Interesting though, only half of the eligible faculty member are enrolled in WellU. This demographic disposition of survey respondents combined with the high response rate of 46% show a solid representation of the population being sampled.

Limitations of the study. One limitation to this study was the self-selective nature of the participants and the fact that they may represent only those who have had positive experiences with the program. Respondents may want to respond positively so as not to jeopardize the program. The retrospective pre- then posttest design involves recollection on

the part of the participants. Since no pretest data was collected at the outset of this program, this design was determined as the best assessment of the WellU program effectiveness historically. Responders are asked to rate their current health related knowledge, skill, attitude and behavior presently as a result of the program and to reflect back and rate that same knowledge, skill, attitude and behavior before participating in the program. The limitations to this type of design to include self-reported memory of the participant at the time of the pretest; however, it is still a popular way to assess learners' self-reported changes in knowledge, awareness, skills, confidence, attitudes or behavior. As a one-shot survey, it takes less time than the standard pre- posttest design. Issues of internal validity, issues of mortality, and testing bias are managed because the information is collected at one point in time.

The university employee population is unique in that it represents a wide variety of types of employees. This varies somewhat from the typical workplace in business and industry. The data collected in this environment can be extrapolated to other groups having a similar environment, i.e., other universities. To date, there have been few published articles or evaluations with data to explain why participants enroll and attend a university-based WHP programs, as well as their perceived barriers and motivators for participation (Ball, 2009; Barker & Glass, 1990; Eckhart, Ebro, & Claypool, 1988; Linnan, et al., 2010; Montgomery, 2008). This is one of the previously stated rationales behind conducting this study as much of the research on WHP programs has been conducted in traditional workplace setting and fewer in the university environment.

Other limitations. The study design did not lend itself to a control group, though non-enrolled employees were measured and compared for their current health behaviors and

status. There were some significant differences in health status, parameters (cholesterol) and behaviors (consumption of fruits and vegetables), with the participants reporting better levels than those not enrolled in the WellU program.

Recommendations for WellU

Experts agree that in order to realize a ROI on a worksite health promotion program, certain elements need to be present. Based on the core components of an effective worksite health promotion program (Chapter 2), here is how the University of Utah compares:

- 1) *Establish a business case for the program specific to the company.* During the initial meeting and discussion on conducting this evaluation there was no mention of a financial ROI business case rationale for initiating this program. A health and productivity cost analysis was conducted by Health Improvement Solutions and Health management associates, a third-party vendor (Calcul8, 2008). The PI gained access to this report during a meeting with Dr. Julie Day who was an early contributor to the structure of the WellU program. The objective of improving employee health was not being measured and there did not appear to be an apparent plan to measure the outcome of this objective.
- 2) *Have management support at all levels.* It was hard to determine if this was present at the university. It can be surmised, based on the size and impact of the incentive that support was present at the highest levels. Support through the management ranks, deans, department chairs, etc. was not measured or determined. (This would be a good survey question in future research.)
- 3) *Assess the need of the population and provide quality, relevant programs that address those needs.* Program participation is encouraged and employees are directed to wellness

programs that already exist on campus. “Programming” directed at the specific and identified needs of the employee population did not appear to be a function of the WellU program. The WellU program enjoyed the direction of a program administrator for the first 2 years after which the program became part of the responsibilities of an already very busy benefits administrator. Without dedicated program management, it is difficult to direct a program that is specific to employee needs and wants. The HRA is often used as a needs assessment with aggregate data that reports on trends for example smoking behavior, stress or nutrition that could be addressed in targeted programs. It did not appear that this information was being accessed or employed to construct relevant and meaningful programs. On the other hand, many of the classes, activities and facilities on campus can meet the needs of the population without extensive targeted programming. This is one of the unique elements of the university setting as compared to a traditional worksite.

4) *Have a comprehensive plan that addresses the business case.* See #1

5) *Establish, align and integrate the WHP program into the corporate culture.* The culture of the university closely reflects the culture of the community in which it resides. Utah is one of the top 10 healthiest states in the US. The culture enjoys recreation, using the outdoors, hiking trails, rivers, and ski slopes. The university offers an extensive program through the campus recreation services, which offers the opportunity to participate on intramural sports teams, fitness classes, outdoor recreation classes and access to equipment. The majority of the population report BMI higher than the desired levels, which again reflect the percentages reported in the state overall. The obesity epidemic is not limited to the university or state of Utah, but is affecting the entire nation. Food choices are contributing to this epidemic, and a culture that reinforces healthy eating

choices will help. The University of Utah provides healthy eating choices in many of its cafeterias. The onus falls back to the employees to make the best choices for personal health and well-being.

6) *Use a variety of methods to communicate effectively with employees.* Although this might be happening, some employees are still missing the information or misunderstanding the information being provided on the WellU program. These efforts appear to be evolving and improving.

7) *Be accessible and convenient.* Facilities on campus might not be convenient to everyone; however, they are accessible and available.

8) *Individualize programs and services as much as possible.* The personalized report produced upon completion of the HRA is the strategy used to individualize this service. Once aware of personal health risks, there are a multitude of personalized services employees can pursue on campus.

9) *Create partnerships within the organization and community.* This is one of the strong points of WellU. The WellU resource page allows employees to find programs both on campus and in the community to help meet their health and fitness needs. Disease management through university hospital and clinic services, occupational health needs through the Rocky Mountain center for Occupational Health and Safety, recreation both on and off campus, and many more resources are available through this service.

10) *Measure and evaluate effectiveness regularly.* This dissertation is the first known comprehensive evaluation of this program. Evaluation can look at many aspects of a program to include financial and behavioral effects. This paper addresses the behavioral

effects of the program; however, a cost analysis/ROI study would also be beneficial to truly demonstrate the effect of the program.

Study Conclusions

The University of Utah's WellU program appears to be meeting the objectives set forth to increase awareness of personal health and well-being for university employees, with the hope that, once aware, employees would make changes toward healthier behaviors (Gines, personal communication, October 2009). The primary tool used was the Health Risk Appraisal. Based on the results of the focus groups and survey data, the HRA improved employees' awareness of healthy and risky behaviors and subsequently stimulated behavior change. Although the self-reported health status of the employee population varied considerably at the outset of the program, improvements were realized by all employees who participated in the program. It is stated in the literature that universities can be an ideal situation for a worksite wellness program because of preexisting facilities and wellness classes that are already part of the curriculum. The University of Utah took advantage of these preexisting programs and integrated them into the WellU program offerings thus creating opportunities for employees to gain the skills needed to effectively change behavior.

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APPENDIX: WELLU SURVEY

WellU Survey

Thank you in advance for completing this survey. It should take you no more than 10 minutes to finish.

Thank You

Demographics

- | | | |
|---|---|--|
| 1 | Gender | <input type="checkbox"/> Male
<input type="checkbox"/> Female
<input type="checkbox"/> |
| 2 | What is your age? | <input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/> |
| 3 | University Employee Status | <input type="checkbox"/> Main campus staff: non-exempt
<input type="checkbox"/> Main campus staff: exempt
<input type="checkbox"/> Main campus faculty
<input type="checkbox"/> Other
<input type="checkbox"/> |
| 4 | In which area of campus do you primarily work? | <input type="checkbox"/> Main Campus
<input type="checkbox"/> Research Park
<input type="checkbox"/> Health Sciences
<input type="checkbox"/> Other
<input type="checkbox"/> |
| 5 | What is the highest grade or year of school you completed? | <input type="checkbox"/> Less than high school
<input type="checkbox"/> Some high school
<input type="checkbox"/> High school diploma/GED
<input type="checkbox"/> Some college
<input type="checkbox"/> College degree
<input type="checkbox"/> Graduate degree of higher
<input type="checkbox"/> |
| 6 | Which one or more would you say is your race? Check all that apply. | <input type="checkbox"/> White
<input type="checkbox"/> Black or African American
<input type="checkbox"/> Asian
<input type="checkbox"/> Native Hawaiian or other Pacific Islander
<input type="checkbox"/> American Indian or Alaskan Native
<input type="checkbox"/> Other (please specify) _____
<input type="checkbox"/> Don't know/not sure
<input type="checkbox"/> Prefer not to answer |

Other (specify)

Well U program enrollment

- 7 WellU program participation? ☐
- ☐ Currently enrolled (completed online General Health Assessment (GHA) and 2 WellU activities within the past two years)
- ☐ Previously enrolled but not currently enrolled (completed online Health Risk Assessment (HRA) more than two years ago)
- ☐ Never enrolled
- 8 If you were "previously enrolled but not currently enrolled", please explain why.
- ☐ Lost interest in the program
- ☐ No time to re-enroll
- ☐ missed the enrollment deadline
- ☐ I am enrolled in an outside benefit program Incentive not motivating enough
- ☐ Concern over the confidentiality of my personal health information
- ☐ I have already learned all I need to know about my health and do not need the information
- ☐ I am already healthy and fit and do not need the information
- ☐ Other
- 9 What years have you participated in WellU if any? Check all that apply
- ☐ Never
- ☐ 2007-08
- ☐ 2008-09
- ☐ 2009-10
- ☐ 2010-11
- ☐ 2011-12
- 10 If you are not currently enrolled, why? (primary reason)
- ☐ Not aware of the program
- ☐ No time to enroll
- ☐ No interest
- ☐ I am enrolled in an outside benefit program Incentive not motivating enough
- ☐ Concern over the confidentiality of my personal health information
- ☐ Do not understand how the program works
- ☐ I am already healthy and fit and do not need the information
- ☐ Other
- 11 What would motivate you to participate in WellU?
- ☐ Monetary incentives not tied to health insurance premium
- ☐ Support from my manager
- ☐ Flexible work time to participate in exercise classes or programs
- ☐ More free health courses
- ☐ Free health coaching
- ☐ Other
- ☐ Probably nothing.
- 12 How would you rank your current health status? poor excellent
- ☐
- ☐ (Place a mark on the scale above)
- 13 How many days in an average week do you perform light to moderate physical activity either leisure or purposeful exercise for at least 20 minutes or more?
- ☐ 0-1
- ☐ 2-3
- ☐ 3-4
- ☐ 4-5
- ☐ 6-7
- ☐
- ☐
- ☐

14 How many servings of fruits and vegetables do you eat on average per day?

0-2
3-5
6-8
9 +

15 In an average day, how many drinks containing sugar or sugar substitutes do you drink (soda pop, fruit juice, coffee or lattes, floats, etc.)?

- ☐ 0-1
☐ 2-4
☐ 5-6
☐ 7+

16 Check all behaviors that apply to you.

- ☐ I do not smoke
☐ I consume less than 7 alcoholic beverages per week
☐ I consume less than 1 sugary beverage such as soda per day
☐ I fasten my seat belt at least 80% of the time
☐ I exercise regularly at least 3 times per week
☐ I consume at least 6-8 servings of fruits and vegetable each day

17 I manage my stress effectively.

rarely

all of the time

(Place a mark on the scale above)

18 My approximate blood pressure is _____. (high number over low number i.e. 120/80)

19 My cholesterol total levels is _____.

- ☐ low (< 150) normal (< 200) borderline high (< 240) high (>240)
☐ don't know
☐

20 My height in inches is _____.

(must answer in inches to get BMI to calculate i.e. 5'6" = 66")

21 My weight in pounds is _____.

My BMI today is (this will calculate automatically based on your height and weight)

22 Do you use integrative health (alternative or complementary health) modalities to help you improve or maintain your health? If so, please check all that apply.

- ☐ Massage
☐ Acupuncture
☐ Yoga
☐ Chiropractic
☐ Homeopathy
☐ Naturopathy
☐ Meditation
☐ Nutrition Supplements
☐ Shamanism
☐ Ayurvedic
☐ Tai Chi
☐ Chinese medicine
☐ None
☐ Other

23 Do you currently use web or smart phone applications to help with behavior change or maintaining your healthy behaviors?

- ☐ Yes
☐ No

24 Comments - any suggestions, thoughts or comments are welcome here.

25 I plan to sign up for the WellU program in this open enrollment period. (nonparticipants, this is your last question. Please page through to page 6 to submit. Thank you for your time!)

- ☐ Yes
☐ No

30 How did you learn about the WellU program?

- ☐ New Employee Orientation
- ☐ Word of mouth
- ☐ Employee Newsletter
- ☐ My department administrator
- ☐ Wellness Champion in my department
- ☐ E-mail from Human Resources
- ☐ Employee Benefits website
- ☐ Do not remember
- ☐ Other

31 What was/is your primary reason (motivation) for enrolling in WellU?

- ☐ The \$40 discount on my monthly health insurance premium
- ☐ Chance to complete Health Risk Appraisal on-line to learn more about my health status
- ☐ Chance to learn about and participate in other WellU health promotion offerings
- ☐ Other

32 Did you participate in the biometric screening service?

- ☐ Yes
- ☐ No
- ☐ No, however I submitted health provider biometric data instead

Please rate the value of the information you received from the Bio-metric screening.

no value

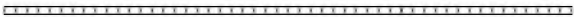
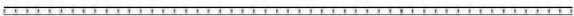
extremely
valuable

(Place a mark on the scale above)

The Health Risk Appraisal (HRA) and your health

- 33 I am more aware of my health status and risks as a result of the HRA report.
- not at all a lot more aware
-
- (Place a mark on the scale above)
- 34 As a result of the HRA, I learned that I am at risk for ...(check all that apply)
- ☐ Cardiovascular Disease
 - ☐ Diabetes
 - ☐ Cancer
 - ☐ Stroke
 - ☐ Stress related illness
 - ☐ Accidental death
 - ☐ Do not remember
 - ☐ I have no health risks
 - ☐ Other
- 35 I believe that the changes I made in my health behaviors because of the HRA/WellU program have resulted in positive changes in my health status (e.g. lost weight, reduced blood pressure, decreased stress, improved eating habits).
- ☐ Yes
 - ☐ No
 - ☐ No, I didn't need to make any changes
- 36 Please identify which methods you have used to help you make this behavior change/s. (check all that apply)
- ☐ Enrolled in Peak Academy classes
 - ☐ Participated in the Passport program
 - ☐ Enrolled in wellness/fitness classes in my community
 - ☐ Began a regular program on my own i.e. walking, recreational sports, nutrition program
 - ☐ No new methods as I didn't make any behavior changes
 - ☐ I didn't need to make any behavior changes
 - ☐ Other
- 37 Which behaviors have you changed or are working to change as a result of the WellU program? Check all that apply.
- ☐ Quit smoking
 - ☐ Started a regular exercise program
 - ☐ Lost weight
 - ☐ Lowered my blood pressure
 - ☐ Fasten my seat belt at least 80% of the time
 - ☐ Ask my doctor for regular preventive screenings
 - ☐ Improved my eating habits
 - ☐ Manage my stress more effectively
 - ☐ Decreased smoking
 - ☐ Increased my exercise level or intensity
 - ☐ Not Applicable
 - ☐ Other
- 38 Do you currently use web or smart phone applications to help with behavior change or maintaining your healthy behaviors?
- ☐ Yes
 - ☐ No
- 39 Do you use integrative health (alternative or complementary) modalities to help you improve or maintain your health? If so please check all that apply
- ☐ Massage
 - ☐ Acupuncture
 - ☐ Yoga
 - ☐ Chiropractic
 - ☐ Homeopathy
 - ☐ Naturopathy
 - ☐ Meditation
 - ☐ Nutrition Supplements
 - ☐ Shamanism
 - ☐ Ayurvedic
 - ☐ Tai Chi
 - ☐ Chinese medicine
 - ☐ none
 - ☐ Other

Your health then and now - this section is to help determine how effective the WellU program is for facilitating behavior change. Participation in WellU includes taking the Health Risk Appraisal (HRA).

- 40 How would you rank your current health status TODAY? poor excellent

 (Place a mark on the scale above)
- 41 How would you rank your overall health BEFORE participating in WellU? poor excellent

 (Place a mark on the scale above)
- 42 Check all behaviors that apply to you.
- ☐ I do not smoke
 - ☐ I consume less than 7 alcoholic beverages per week
 - ☐ I consume on average, less than 1 sugary beverage such as soda per day
 - ☐ I fasten my seat belt at least 80% of the time
 - ☐ I exercise regularly at least 3 times per week
 - ☐ I consume at least 6-8 servings of fruits and vegetable each day
- 43 BEFORE participating in WellU, how many days in an average week did you perform light to moderate physical activity either leisure or purposeful exercise for at least 20 minutes or more?
- ☐ 0-1
 - ☐ 2-3
 - ☐ 4-5
 - ☐ 6-7
- 44 TODAY, after participating in WellU, how many days in an average week do you perform light to moderate physical activity either leisure or purposeful exercise for at least 20 minutes or more?
- ☐ 0-1
 - ☐ 2-3
 - ☐ 4-5
 - ☐ 6-7
- 45 BEFORE participating in WellU, how many servings of fruits and vegetables did you eat on average per day?
- ☐ 0-2
 - ☐ 3-5
 - ☐ 6-8
 - ☐ 9+
- 46 TODAY, after participating in WellU, how many servings of fruits and vegetables do you eat on average per day?
- ☐ 0-2
 - ☐ 3-5
 - ☐ 6-8
 - ☐ 9+
- 47 BEFORE participating in WellU, in an average day, how many drinks containing sugar or sugar substitutes did you drink (soda pop, fruit juice, sweetened coffee or lattes, floats, etc.)?
- ☐ 0
 - ☐ 1-2
 - ☐ 3-4
 - ☐ 5-6
 - ☐ 7+
- 48 TODAY, after participating in WellU, in an average day, how many drinks containing sugar or sugar substitutes do you drink (soda pop, fruit juice, sweetened coffee or lattes, floats, etc.)?
- ☐ 0
 - ☐ 1-2
 - ☐ 3-4
 - ☐ 5-6
 - ☐ 7+
- 49 BEFORE participating in WellU, my approximate blood pressure was _____. (high number over low number ex. 120/80)
- 50 TODAY, my approximate blood pressure is _____ (high number over low number ex. 120/80)

51 BEFORE participating in WellU, my approximate total cholesterol Total was...

- ☐ low (< 150)
☐ normal (< 200)
☐ borderline high (< 240)
☐ high (>240)
☐ don't know

52 TODAY, my total cholesterol is...

- ☐ low (< 150) normal (<
☐ 200) borderline high (<
☐ 240) high (>240)
☐ don't know
☐

53 BEFORE participating in WellU, my height in inches was _____.

(must answer in inches to get BMI to calculate
i.e. 5'6" = 66")

54 BEFORE participating in WellU, my weight in pounds was_____.

My BMI before was

(This will calculate automatically from the ht and
wt fields)

55 TODAY my height in inches is _____.

(must answer in inches to get BMI to calculate
i.e. 5'6" = 66")

56 TODAY, my weight in pounds is_____

My BMI Today is

(This value will calculate automatically from
height and weight)

57 BEFORE participating in WellU, I managed my stress effectively.

rarely all of the time



(Place a mark on the scale above)

58 TODAY, I manage my stress effectively.

rarely all of the time



(Place a mark on the scale above)

Summary - Because of completing the HRA and participating in WellU...

- 59 My health behaviors have improved. strongly disagree strongly agree
_____ *(Place a mark on the scale above)*
- 60 I take better care of myself. strongly disagree strongly agree
_____ *(Place a mark on the scale above)*
- 61 I am rarely sick or sick less and therefore visit the
doctor less often except for physicals and preventive
screenings. strongly disagree strongly agree
_____ *(Place a mark on the scale above)*
- 62 I have had fewer sick days and am more productive at
work. strongly agree strongly disagree
_____ *(Place a mark on the scale above)*
- 63 The health of my family has improved. strongly disagree strongly agree
_____ *(Place a mark on the scale above)*

Comments

- 64 Please add any comments or suggestions you would like to make regarding the WellU program. Thank you
